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# Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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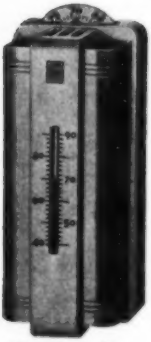
# DEVILBISS EQUIPMENT

## Spray-Finishes for Minneapolis-Honeywell Regulator Co.



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DeVilbiss Spray-Finishing Equipment speeds up finishing operations, saving both time and labor and reducing finishing costs. And the finishes produced by this superior equipment are of a higher quality, imparting greater selling appeal to your product . . . Consider DeVilbiss Spray-Finishing and Exhaust Equipment for your finishing problems. You, like the thousands of manufacturers who have standardized on it, can expect 100 per cent satisfaction from its use.

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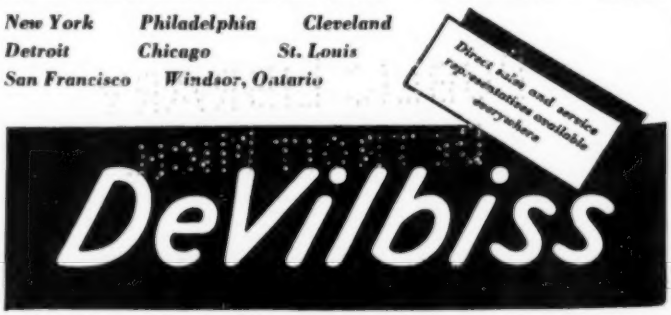


# Letters from Readers of "Industrial Finishing"

**Editor's Note — These letters have been promptly answered and all of the inquiries have been referred to advertisers in the magazine. They are published here to indicate or suggest certain interesting trends of thought and activity in the industry, and to encourage further inquiries, comments and suggestions. The names and addresses of firms or individuals whose letters are published here may be had by writing to this office, or letters addressed to them in care of this office will be forwarded immediately.**

## Toy Lacquer Enamels

Please give us the names of two or three manufacturers who can furnish lead-free opaque lacquers in different colors suitable for finishing toys.—G. A. Co. (Brush Handles).

## Crystallizing Lacquer

Can you please give us the name of the manufacturer of an air-drying lacquer that dries with a crystalline or frosted effect? This is toned, we believe, with analine colors, and made up in red, green, blue and clear. — B. Q. Co. (Window and Counter Displays).

## Fire Red Enamel

We are sending you a small folder which describes our products. As you will observe, many of them are finished in red. Some of the items are steel, but the majority are brass.

We have always used lacquer but it has never been satisfactory both because of the trouble encountered when the humidity is high, and also because of insufficient toughness. We are considering enamel instead of lacquer and thought that possibly you could recommend one or more firms who could help us in finding a material which, when applied to brass, would provide a finishing coat that would perhaps be equal to that of a letter file.

As we understand it, it is hard to obtain the same toughness with a red paint or lacquer, but red is the color we have to use, so we want to locate the manufacturer who can provide a red finishing coat that will be extremely tough and durable. We are ready to bake if that is necessary, but we gather that there are some enamels which do not require baking and still are very tough.—J. G. Co. (Fire Extinguishers).

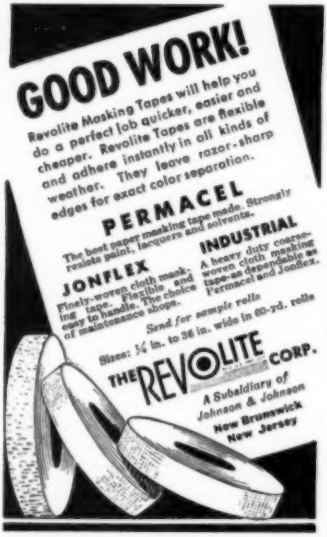
## Flock Lacquer

We are looking for the name of a concern that can offer us a good adhering lacquer for spraying colored wool flock on metal. We use quite a number of paints, varnishes, etc., in our business and are interested in anything new in metal finishes.—B. L. Co. (Metal Photo-frames).

## "Bitumastic"

In October issue of INDUSTRIAL FINISHING (page 9), we note the inquiry regarding "Bitumastic." This is a copyrighted trade mark of the Wailes-Dove-Hermiston Corporation, New York, N. Y., and can only be applied to their product.

We are prepared to furnish either Bitumastic or bituminous solution for use on aircraft, seaplanes, general manufacturing, and building maintenance, with a completely outlined method of applying this material so that it will conform to the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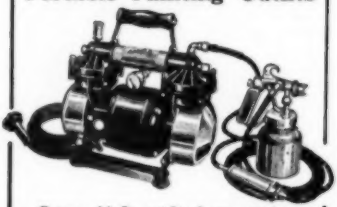

Crown Airflo outfits have ample capacity to handle lacquer, synthetics and all modern finishes with speed, economy and satisfaction. Compressors operate without oil, insuring CLEAN air at all times—fewer moving parts—blower-cooled G-E motor . . extremely portable. Greater pressure and volume per motor horsepower guaranteed. Send for details.

**Crown Spray Gun Mfg. Co.**
1218 Venice Blvd., Los Angeles, Calif.
*Warehouses in Principal Cities*


approved method as used by the United States Navy.

If you will send us the name of the inquirer, we will be pleased to furnish complete information.

The material which we have to offer can be used on metal, wood or any surface requiring complete protection from the elements.—Engeom Process Corp. (Preservative Paints).

## Soft Texture Flock

Seeing an article in your magazine of September, 1936, by Howard H. Ford, on "New Soft Texture Flock," I wonder if you could give us any information as to where to buy this flock, or get in touch with Mr. Ford? We use a large amount of flock.—T. O. Co. (Lacquer, Enamel and Flock Finishes).

## Dipping Machines

We refer to your item in the October issue under the heading "Dipping Machines Coming" (pages 72, 73). Would you be kind enough to give us the correct name and address of the manufacturer of these machines?

We should also appreciate your giving us, if you possibly can, the names of any concerns manufacturing bead dipping machines. — Q. Products Inc.

The company promising new dipping machines is the Northern Machine Mfg. Co., Wausau, Wis.—Ed.

## Pearl Essence

In connection with your magazine INDUSTRIAL FINISHING, we have at times noticed more or less regarding finishing in pearl essence. Can you give us the names of some of the better known manufacturers of this type of material?—F. E. O. & Son. (Wood Turnings & Handles).

## Acid-Proof Paint

We are turning to you for assistance in contacting manufacturers of acid-proof paints or lacquers that can be used on the metal parts of protective equipment we furnish for use in dangerous areas.

We are particularly concerned with the corrosion of sheet metal parts, due to the formation of hydrochloric acid, where equipment is used in a chlorine gas atmosphere.

We would greatly appreciate any assistance you are able to offer either in the way of recommendations for particular finishes, or addresses of possible suppliers of an acidproof finish.—N. T. Co. (Everything for Industrial Safety).

## Buffing Wood Finishes

The writer would appreciate receiving whatever information you have on buffing wood furniture finishes. We saw the article by W. T. Smith in the September issue of INDUSTRIAL FINISHING, but are of the opinion that you have some articles on file where mechanical polishing machines have been used successfully on this type of work.—N. U. Co. (Portable Flexible Shaft Equipment).

## Masking Tape

Having had many valuable hints from your paper during the four years I have taken same, I should esteem it a great favor if you could supply me with the information regarding where Permacel Flexible Paper Masking Tape could be obtained.—G. R. S., Erdington, Birmingham, ENGLAND.

This material is a product of The Revolite Co., New Brunswick, N. J., a regular advertiser in this magazine for several years.—Ed.

## Bleaching Materials

We are interested in obtaining information as to the methods and materials to be used in bleaching dark woods, such as walnut and mahogany, to light colors. We notice this is being done by many manufacturers and we are interested in knowing how to do it.—G. D. Mfg. Co. (Store Fixtures & Show Cases).

We note in INDUSTRIAL FINISHING magazine for September, that you have an inquiry for a bleach to be used on antique wood stained and aged. The signature is "S. C. Co." (Mfrs. of Elapsed Time Records) see page 5.

You also have another inquiry regarding veiling, spattering and stippling lacquer. The signature of this inquiry is "B. & C." (Furniture), see page 65.

In regard to the first inquiry, we make a bleach that has proved en-

*(Continued on page 77)*

BLEACH

IN ONE APPLICATION

**Gilco 2 in 1 Odorless WOOD BLEACH**

...is a new achievement of our laboratories, and brings to the wood finishing industry a product that produces remarkable bleaching results.

Superior bleaching results with only one application are obtained on Mahogany and Walnut and also on Maple, Birch and Gum woods.

Write now for complete information and order a quart unit and realize the tremendous labor saving results that can be obtained with this new bleach.

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# Finishing Radio Cabinets

WATER STAINS, the old standbys which still enjoy a wide usage in case goods and bedroom furniture, were never used to any great extent in radio work. While they are inexpensive, the drying time and subsequent sanding of the raised grain are rendered impracticable for reasons mentioned heretofore. One large producer does perform a blending operation on the raw wood with water stain as a prelude to a filler-stain operation. In this case the stain powder is made into a concentrated aqueous solution which is cut back strongly with alcohol to accelerate drying and to reduce grain raising; it is "fogged" on and force-dried briefly in a hot box or oven.

Perhaps 90% or more of radio cabinets are stained with . . . . "non-grain-raising stains." In general these stains are of two types and probably do not vary greatly in composition. Since the solubility of water-soluble anilines in volatile solvent of non-grain-raising character is confined pretty largely to one of the ethyl-

.. by W. T. SMITH

# PART II
# STAINING

Photographs, courtesy of R. C. A.-VICTOR

ene glycols, the use of which is covered by patent, manufacturers have little alternative but to comply, or dissolve the dyes in a small quantity of water and cut back strongly with a methanal and toluol, regulating the penetration by adjusting the ratio of solvents of varying surface tension and vapor pressure. Very small quantities of gum may be added to either type to attempt to regulate penetration on soft woods.

The former or "licensed" type of non-grain-raising stain is more expensive but generally perhaps a little more reliable. The justification however of the cost, in advantages shown, is quite problematical.

The problem of color control is no small one and to this end a salt, usually sodium sulphate, is employed to balance specific gravity, and shipment is made in wooden packages to avoid corrosive discoloration. There is some slight precipitation of color but usually not enough to seriously affect the true stain color.

The substitute types, employing water, are less reliable but are used in great quantities with apparent success. They tend strongly to precipitate or "kick out," and are usually supplied in agitator containers. Mixture of basic elements to produce a desired color occasionally results in "kicking out" tendencies of one of the colors. A drop of stain on filter paper will often produce a spot of concentric rings of color, indicating a non-homogeneous mixture in blended stain. These stains will raise the grain more than the ethylene-glycol type.

These stains are invariably sprayed, usually from gravity-feed containers, and will dry for coating in from 30 to 60 minutes. There is the almost inevitable streaky or banded effect from spray-gun laps on large panels, especially on gum or other close-grained woods. This condition may be kept at a minimum by careful skillful application, and is often largely dissipated by the filler operation. It is the custom — and a commendable one — of most users of these stains to follow them with a thin wash coat of white shellac or a colored glaze of similar body; then the surface is allowed to dry and it is sanded lightly before filling the entire cabinet.

It is advisable, when spraying these stains, to adjust the concentration to a point where the desired color is produced by a single wet coat of stain—that is, the stain is applied to a point just short of running, where a distinct film may be seen on the surface. This method of application is the best assurance of uniformity, since any attempt to "fog" on a more concentrated solution will result in a differentiation in color in practically every piece. Take a large panel, shield one-half of it, and have your best spray man stain the one half; reverse the shielding and ask him to stain the second half exactly the same; then compare the halves. You'll be surprised.

On two-tone and three-tone work, which is decreasing in usage with the growth of the solid color Modern types, the darker toned parts are usually cut in with stain of appropriate color, the workman applying same with a brush, rag or felt on the raw wood before putting on the final all-over body stain.

An interesting phase of these stains is that you can produce four or five different colors in succession from the same vessel of stain, merely by varying the application. A wet coat at low pressure, for instance, will produce a distinctly different effect from a "fog" coat applied at high pressure. The only safe way to check stains for color is to pour them in excess over a wood surface supported at an angle of about 60° to the horizontal — when again a variable will result according to the surface tension of the incorporated solvents.

***Pigment Stains***

Pigment stains—which are in fairly wide use on certain types of novelty furniture—have been used on radio cabinets with a fair degree of success. Modern pigment stains are not to be confused with the conventional old familiar wiping stains, or even with filler stains, but involve a very fine pebble-mill grind of a combination of earth and organic lake pigments, ground in a polymerized oil or synthetic-gum binder. They may or may not contain a little dye to supplement undertones which are not available in lake pigments.

These stains contain about 10% pigment, may be supplied in almost any color, do not settle seriously, and may be applied by dipping, spray, brush, or rag; in short, by any method which applies the stain in excess to the surface to be stained. Within about four to five minutes the surplus stain should be wiped from the surface with rags, and after about one hour's drying, the piece may be coated.

There are certain marked advantages and disadvantages in the use of these stains, in which for production radio work, the latter may possibly predominate. The principal advantage lies in the fact that a modern pigment stain, containing properly balanced ratios of earth and lake pigments, is not a homogeneous color like a dye solution, but a mixture of individual color elements.

***Under-tones and Over-tones***

When applied to wood and wiped, the stain brings out every vestige of figure and grain in the wood, and produces a clearly defined under-tone and over-tone of color, giving the wood, regardless of texture or species, a depth, character and soft richness that cannot be produced by any other method.

Control of these under-tones and over-tones is delicate and productive (in the formulation of the stain) of an almost endless series of color combinations. For example, in a walnut stain we may have an amber under-tone with a rich Van Dyke over-tone, a red over-tone or a red brown over-tone; conversely, with our Van Dyke over-tone, the under-tone may be varied from amber to lemon, orange or red. Dead cold tones may be produced by pigment stains which, even when held in sunlight, show no trace of bronzing or greenish tints.

Contrary to a persistent belief, modern pigment stains are not muddy; if wiped clean, they show a remarkably clear and brilliant light-fast coloring, due to the brilliance and transparency of the lake colors employed. On less valuable woods, the beauty resulting from the use of pigment stains is most apparent where a high degree of uniformity is obtained; whereby walnut veneer, sap gum, red gum and tupelo may be blended together into satisfactory harmony in one operation; and where figure and grain are brought out in woods where, by any other method, their presence would remain unsuspected.

Pigment stains produce a richness of color that bears up surprisingly well under artificial light, displaying under this condition a heterogeneous wealth of depth and color, where dyed wood may become gray and lacking in character. Unfortunately, the coloring character of these stains, while apparent to and appreciated by the artist and designer, is beyond the notice, aesthetically, of the average individual, be he a manufacturer or buyer of the radio cabinet. . . .

***The Filling and Sealing Effects***

A definite filling or sealing effect is produced by pigment stains on close-grained woods which, under this stain, require no further filling. In fact, this represents one disadvantage of these stains wherein, if filler be applied over them, the greater part of the stain, being of a nature similar to the filler, is removed; and, on a large-pored wood surface, the result is dominated by the filler color. On gum-framed walnut cabinets, therefore, it has been customary to fill only the open-pored woods, avoiding those parts where actual pore filling is not necessary. This involves a rather delicate cutting-in operation for production processing. On cabinets constructed wholly of gum,

tupelo or maple, filling is dispensed with entirely.

On a wholly walnut or mahogany cabinet, where filling all over is imperative, the effect of the coloring of the stain is partially lost due to the action of the filler upon it, and a double hand-wiping operation is imposed upon the processing schedule. The final major disadvantage of the stains is that their promoters have never been able to employ a binder that will not weaken the bond of lacquer coatings to the wood, resulting in a "short" or "brittle" and easily marred finish.

### *Walnut Butts and Burls*

The advantageous handling of walnut butts and burls, despite their wide employment in the industry, remains a mystery to many manufacturers of radio cabinets. In order to bring out the best possible effect in beauty and depth in walnut butts, in the conventional colors dominating the industry, a sharp yellow, lemon or amber toner should be applied to the raw wood after all traces of sanding dust have been blown from the pores. This toner is of the non-grain-raising type and is of such concentration that its presence on the wood is just apparent. It may be wiped on with a rag, or brushed or sprayed; but the first is probably preferable. This operation is immediately followed by the regular body staining just described. Where a pigment stain is used a glaze, composed of a yellow dye added to about a 1 or 1½-lb. cut of orange shellac, is brushed or sprayed on as a preliminary operation. This serves the double purpose of toning the butt wood and holding out the stain and filler to preserve the brilliance of the rich natural coloring of the wood.

### *Sap Staining Walnut Veneers*

Sap staining of walnut veneers, due to the increasingly poor quality of available material, is an almost indispensible operation on radio cabinets. Here again is an operation that is much more abused than used. Despite its wide usage, it is not possible to sap stain correctly and indiscernibly, by merely spotting in the sap with a small spray gun, especially with a water stain. It probably can be done by a very skillful craftsman with an unlimited amount of time on his hands, but the writer has never seen it performed creditably on a radio-cabinet production line.

The only practical modern method of doing genuine uniforming of walnut sap is by using a sap stain made for the purpose—one of the non-grain-raising type—and brushing or "ragging in" the sap streak with stain of high concentration; then immediately ragging off the entire section, over and adjacent to the sap, with a rag pad wet with a solvent for the stain; a combination of methyl alcohol and toluol will usually suffice. This "ragging off" removes surplus stain and obliterates the edge line, blending the sap into perfect harmony with the surrounding heart wood. After correct application of this method, anyone—even the most expert—may be safely defied to distinguish the existence of any sap in a finished area.

A sap stain for this purpose will be of a distinct purple tone which, when cut down by ragging, produces the rich brown necessary to match heart and butt wood. One vendor of stains has

matched the natural coloring element of American walnut so well that any walnut from pale quarter sliced to very dark butts may be "sapped" perfectly with this one stain. This is a foolproof "sapping" method in that during the ragging operation the operator has a flash glimpse, while his surface is wet, of just how it will appear when finished.

Again in decorative or special staining, as in two-toned work, the design of the piece must be carefully considered if maximum economy is to be effected in finishing. Obviously it is not practical to use a maple or sap gum inlay with butt joint edges which is to be stained a darker tone than the surrounding areas and necessitating the services of an expert striper, or the use of elaborate shields. When possible, areas to be specially stained should have broken edges, as by moldings, beads or routings, in order that they may be brushed readily, or "straight edged" and sprayed.

*Part III of this article, to appear next month, takes up . . . Filling, Sealing, First Coating, Shading.*

## Alfol Reflects Heat

One of the recent changes in the radiator business has had nothing to do with the actual radiators, but rather with its major function of radiating heat. The improvement along this line has been accomplished in a most effective way by the simple application of an aluminum foil reflector which is fastened behind the radiator. The heating efficiency of the radiator is increased tremendously . . . and with considerable saving in the cost of fuel.

The product responsible for these and other results of practical value is known as the Alfol Heat Reflector, made by Alfol Insulation Co., Inc., Chrysler Bldg., New York, N. Y., a firm whose product has been used throughout the world for more than seven years, in practically every industry where insulating material plays a part.

Physically, Alfol is a sheet of pure aluminum that reflects 95% of radiant heat. World-famous laboratories have tested Alfol rigorously and verified every claim for its efficiency. It is being used in large quantities by the U. S. Navy, Frigidaire, General Electric, railroads, airways, and many other prominent industrial concerns. Throughout the country, Alfol is the favored insulation for homes and commercial buildings, and has been tested and approved for this purpose by the American Society of Heating and Ventilating Engineers, Massachusetts Institute of Technology, U. S. Bureau of Standards, and similar organizations.

**Referring to these three new "White" trucks, with uniformed drivers standing at attention, the Hilo Varnish Corp., Brooklyn, N. Y., advises us that "this is the first of a new fleet of trucks just starting operation in the New York Metropolitan district. The general color scheme is red and yellow. The appearance of trucks and the uniformed chauffeurs have created much favorable comment from our customers."**

# Stencil Screen Work

by H. L. Hiett
General Manager
Prairie State
Products Company

This cut is made from a screen-stenciled picture in colors—blue, red, gray, yellow, brown, white and black; size 6¾x8¾ inches.

TO REVEAL a comprehensive idea of how diversified stencil screen printing really is, an outline of its qualifications may lend suggestive matter whereby, with its adoption and application to certain manufacturers' products, a profitable addition to their production programs can be realized, providing it dovetails in satisfactorily one way or another.

Pictures are now being screen processed in several different colors on real canvas and sold as genuine oil paintings. Etchings are so cleverly reproduced that an old experienced etcher cannot distinguish any difference.

Printing of richly colored velvets with bronzes and pastel colors, is being accomplished, as well as screen process printing of silks, rayon and cotton goods, with gelatin-base aniline discharge colors and solids.

Today milk bottles, tumblers, steins, glass canteen signs, globes and radio dials are printed with ceramic colors, all screen processed, and fired or fused.

Vitreous enamel signs and various works of art, as well as im-

# in Production

*Editor's Note—The writer of this article is a well-known stencil-screen technician, as well as being a skilled designer and artist. He is the author of published books on the subject... has been employed in many plants where his knowledge of stencil-screen work led him from the sketch board to plant executive. Through these connections he has had opportunities to analyze as well as devise new methods.*

*This work has included decorations for furniture and commodities, where cane effects and designs of all kinds were reproduced, as well as inlaid grained wood effects true to the rich color and figure of the wood itself. Many other novel and unique designs have been worked out for card-table tops, magazine racks, juvenile furniture, playthings, and novelties of every description.*

**This cut is made from a screen-stenciled design in black and white, size 7⅜ inches.**

prints, are being screen processed with vitreous enamel colors upon metal, and fired. There are vehicles on the market that enable the processor to lay on as many colors as are desirable before final firing. In other words, all colors may be screen processed before fusing, thereby cutting down production costs. (With the old brush-out method, a firing was necessary between each color.) Also, included is the stencil screen printing of indoor electrical advertising signs and lamp shades with brilliant transparent colors.

Decalcomanias in both lacquer and long-oil colors are being screen processed for both indoor and outdoor use, including the decorating and lettering of buses, trucks and gasoline pumps.

Metal signs, wood signs and road markers are being screen processed in synthetics, as well as the screen processing of 24-sheet posters in many colors . . . on down to fabric and metal tire covers, cut-out window displays, paper and cloth banners, pennants, arm bands, change mats, catalog covers, greeting cards and the like; also newspaper bags, shopping bags, laundry bags, etc.

All of the items just mentioned may be screen printed by hand, with impressions up to 250 per hour, per one operator—according to the article being printed. For example, a printing concern, using the screen process, prints 22

greeting cards upon a single sheet of paper, using two operators—one to do the printing, the other to handle the racking. As many as 150 impressions per hour are made, which amounts to 3,300 greeting cards per hour. These are cut to size after printing.

Screen process printing is not only being done by hand but with machines—regular screen process printing presses which print up to 3,000 impressions per hour. There is now on the market a stencil screen chase that fits on the Gordon letter press. It can be adjusted into position in only a few minutes. Then there are machines on the market for screen process printing of milk bottles, tumblers, etc., with ceramic colors. There is no telling how many different types of machines are in use. Many of them are designed for special lines of business. Some of these machines are home-made affairs, and are not openly displayed.

One process printer has devised a machine for printing celluloid reflector signs, printing one up, and making 1,000 impressions per hour. He now has three such machines in his plant to keep up with incoming orders for his products.

Other types of machines used in the screen process printing plant include: Coating machines for ground coating and varnishing metal, wood, cardboard and paper, preparatory for screen process printing; electric paper cutting machines, as well as the hand powered ones, for cutting cardboard and paper stock, after or before process printing; air-brush equipment used in some screen process shops for spraying the backs of indoor metal illuminated signs, and for applying protective coatings on the backs of outdoor metal signs such as highway markers and small real estate signs. Some of the larger and more prosperous plants have their own paint-grinding equipment for preparing their own screen process color mediums.

On the other hand, many small plants scattered throughout the country are doing a prosperous business with only a limited amount of equipment, such as the printing frame with the necessary tables and racks, of which there are many different types according to the class of business one is featuring.

The large chain stores all have their own screen process printing plants situated in a key city. Some of these plants operate as high as 60 skilled artists and operators for making window announcements, displays, etc. . . . . some on cardboard and paper, some on metal and cloth.

Printers and lithographers are forced to recognize its use. Colleges and manual training schools are teaching the method; some wonderful posters have been made by students. Large manufacturing plants have indorsed its use. One large stove company imprints all its stoves with the stencil screen and vitreous enamel.

Annually there are large quantities of screen process paint and certain types of varnishes used, opening up a new outlet for paint manufacturers. Thousands of yards of silk bolting cloth and organdies, as well as metallic cloths are being consumed annually.

There are about 25 methods of treatment for the making of stencil screens . . . . ranging all the

way from the old hand cut-in or blocked-out method to the patented film knife-cut and direct and transfer photographic systems. The method to use depends upon the type of material to be printed, the quantity to be produced and the fineness of detail desired.

One type of screen will stand up for 5,000 to 10,000 impressions, while in some instances probably only 50 or 100 impressions are required; then the more economical method is used. After the screens are set up in position, any shop boy or girl can do the actual printing, which becomes rapid and mechanical with practice.

After reading this article, you may come to the conclusion that this process might fit into your production program. If so, I will be pleased to cooperate with you in analyzing your problems or assisting you in any way possible.

## Blushing

When a lacquer film takes on a white or grayish cast during the drying period it is said to "blush." This is caused by the precipitation of a portion of the solid contents of the material, which gives an opaque appearance.

Oil and water mixed with the film are common causes. Moisture and oil in the spray system, or a high relative humidity in the atmosphere, often causes blushing. Direct drafts or insufficient ventilation and a fast-drying thinner will often cause blushing. It is advisable to use thinner supplied by the manufacturer of the lacquer . . . .

To prevent blushing, keep the temperature of the room quite high and thus lower the relative humidity. Also, use a small quantity of high-boiling solvent which will remain in the film until it is dry. Small traces of moisture are always present in freshly applied lacquer films, and unless the solvents used are of the type that have lower vapor pressure than water, or that form evaporating mixtures with water, the film is likely to blush.—THOS. C. ZINO.

## Joins V. J. Dolan & Co.

Mr. Thomas H. Morris, Jr., 411 Starling Ave., Martinsville, Va., has joined the staff of V. J. Dolan & Co., Chicago, Ill., and will cover sections of Virginia.

## M. & W. Paper Lacquer

A portfolio which demonstrates the value of paper lacquer for protecting and enhancing the beauty of fine color work is being sent out by Maas & Waldstein Co., lacquer manufacturers, Newark, N. J.

The portfolio contains two identical designs in six colors, one of which is just as it came from the press, while the other has been treated with a coat of Crystalustre, M & W's new lacquer for paper and cardboard. The manner in which the coating of lacquer intensifies colors is obvious at a glance, and a little experimenting shows that the lacqered surface is proof against ordinary scratching, marring, and smudging, and readily withstands washing.

The use of lacquer on paper and cardboard is a recent development, but it is increasing constantly. Advertisers and package designers are finding that lacquering is desirable for car cards, window cards, displays of various kinds, cartons, labels, wrappers, menus, and other kinds of printed and lithographed art work that should be both beautiful and durable.

Crystalustre, the manufacturer claims, is flexible, colorless, odorless, quick drying, and easily applied. It protects the surface to which it is applied from dirt, discoloration, stains, and the effects of water, soap, grease, oil and fat, and alcoholic beverages, and it will not darken with age, discolor white or light colors, or become soft and tacky.

CLEANING AND FINISHING

# Buick Automotive Parts

by J. B. Nealey
American Gas Association

IN THE BUICK MOTOR CO'S. plant at Flint, Mich., automotive parts to be sprayed with lacquer—fenders, hoods, radiator shells, running boards, chassis coil springs, etc.—are first prepared by bonderizing and drying in gas-fired ovens. Changes have been made in the process whereby the work is treated for a period of only 1½ minutes in the bonderizing solution, where formerly an immersion of 4½ minutes was necessary. The solution tanks were formerly of 48,000 gallons capacity but now 10,000 gallon tanks suffice. The solution formula was altered and its strength changed to make this change possible.

The entire process is as follows:

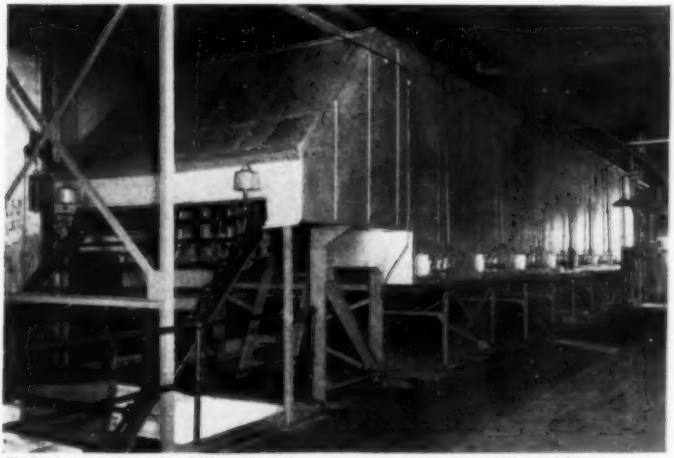
1) Wipe parts with kerosene.

2) Clean in pressure spray washer with water at 150°F. (for 45 seconds).

3) Rinse with cold water by pressure spray for 30 seconds.

4) Repeat for 30 seconds.

5) Treat with bonderite by pressure spray for 1½ minutes.



End of oven through which automotive parts are conveyed in bake-finishing process.

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### Heat Resisting Vehicle for Use with Aluminum Powder

Try it yourself, one-two-three months in a humidity cabinet, an aluminum finish with Hilume will show no tendency to peel or blister.

After the humidity test, hold the same specimen over an open flame until the metal gets red hot and then let it cool—the finish adheres and holds its bright color.

Immerse this heat treated piece in gasoline for two or three hours, there is no injurious effect—the finish hangs on.

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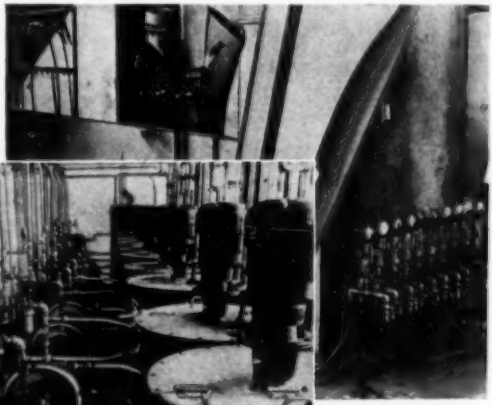

Right—Spraying automotive parts. Each color is supplied by a separate pipe line in the continuous circulating system.

Left—Mixing tanks and pumps which supply finishing materials of correct color and viscosity, through a piping system to spray booths.

6) Rinse in cold water by pressure spray for 45 seconds.

7) Chromic acid rinse by pressure spray for one minute.

8) Dry in gas-fired open-flame oven for 2¾ minutes. (This oven is 60-ft. long.)

All of these operations are performed while the work travels along on a moving conveyor consisting of two closed-loop chains moving two parallel lines of work. Fenders and running boards are carried by one chain and the balance of the work by the other. This conveyor is 270-ft. long and travels at a speed of 16-ft. per minute.

The separate units consist of sheet-metal booths or hooded compartments (about 12-ft. high) with the conveyor passing through all. The washer is 60-ft. long and contains two rows of vertical perforated pipes through which hot water is forced in a multitude of sprays. A tank below serves as a reservoir in which the pumps work. The bonderizer is 75-ft. in length, the first 24-ft. containing the same type of spraying equipment but using the bonderizing solution. An 8-ft. drain board follows and then a clear water spray rinse occupies a space of 12-ft.; this also is followed by an 8-ft. drain board. The chromic acid rinse, also a spray, comes last and occupies 16-ft. The dry-off oven is 50-ft. long and is heated with nine perforated gas pipe burners.

Another process used consists of a single coat of rubber enamel dipped on by conveyor and baked in a gas-fired oven for 17½ minutes at a baking temperature of 475°F. This is followed by a

# MULTIFORM FINISH

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● Two-tone effects are now available with Multiform Finish at no extra cost.

Multiform Finish requires no special equipment.

One entry into booth completes the finish.

Air Dry system dries as fast as lacquer.

Baking system is a 35-minute bake.

Unlimited color combinations to choose from.

You can have an exclusive pattern formation.

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dipped coat of black primer baked at a temperature of 390°F. For this there is a chain conveyor passing through two ovens with two dips. Each oven is about 50-ft. long and 14-ft. wide, and is heated with drilled gas pipe burners located close to the bottom.

Parts that are lacquered are given several coats in quick succession with a few minutes air drying in between. The finish is sprayed on in modern booths with flood lighting and positive ventilation. These booths are in pairs in tandem, one side of the work being sprayed in the first and the other in the second. Along one side of the booth is a series of 10-in. vertical tubes about 4-ft. long together with a curtain of falling water. Particles of lacquer are caught by the water while the vapors are drawn down and up the tubes by induced draft. The descending water is caught in a sludge tank and the floating lacquer skimmed from the top. The flood lights are above and back of frosted glass lamps which are protected from overspray.

As 10 standard colors are used, color control is effected by having them all mixed in one room. They are then piped to the individual booths through 10 separate pipe lines, each line having a valve in each booth. The work is baked for 32 minutes at 170°F.

A substitute process for bonderizing has recently been introduced and is known as the Chromodine process; it is designed primarily for parts that may be subjected to bending after japanning. Parts treated acquire a thin coating of iron chromate. The equipment required is practically the same as for bonderizing. The Chromodine solution, heated 180° to 190°F. is either sprayed on or used as a dip, one minute contact only being necessary. This is followed by a cold rinse (dip or spray) and drying in a gas-fired oven. Before japanning, however, the surface is wiped with a tack rag.

## Insulating Wool

An illustrated 6-page folder from the United States Gypsum Co., 302 W. Adams St., Chicago, Ill., gives interesting facts about fireproof Red Top Insulating Wool which is offered as an excellent insulating material.

## Colorcode Corporation

Mr. Howard Ketcham, inventor of Colorcable, an inexpensive device for transmitting color samples via cable or telegraph, announces the formation of Colorcode Corp., to which have been assigned all Colorcable patents. The Colorcable machine recently proved its practicability when Paris fashion colors were cabled to New York in a matter of minutes and sold by Marshall Field & Co. to more than 40 department stores throughout the country.

Officers of newly-formed Colorcode Corp. are Howard Ketcham, president; Walter Spry, vice-president; Walter T. Neville, secretary. Mr. Spry is general manager of Munsell Color Corp. of Baltimore, Md. In Colorcode Corp., he will be specifically in charge of personnel and maintenance of the absolute accuracy of color-discs used in Colorcable machines.

Offices of the new corporation have been opened in New York at 30 Rockefeller Plaza; also in Paris and Baltimore. A large number of textile manufacturers and department stores have already subscribed to the service which provides individual color selections at the four Paris fashion openings and almost instantaneous transmission of these colors to any designated city with telegraph facilities.

The Colorcable device also provides a practical and ingenious method of creating entirely new shades of color. Without the mess involved in mixing paints and dyes, without the delay involved in waiting for them to dry, any one of more than 300,000 possible shades of color can be created in a few minutes by varying the proportions of the color discs used on the Colorcable rotor.

# *Decorative Finishes*

by Albert F. Byers
Benjamin Franklin Paint & Varnish Co.

AT THE PRESENT TIME there is a widespread appreciation of the value of eye-appeal in industrial finishes, which tends to bring decorative coatings into prominence. With this in mind the writer has taken the liberty to parade before your attention a number of decorative finishes, some of which are frankly old (perhaps in some cases so completely forgotten as to be new to a large proportion of the public). Others the writer has worked out for himself, and while he lays no claim to being the first to initiate them, so far as he knows they are original and are here presented for the first time.

In this parade of decorative designs, from which products known to be patented have been omitted purposely, we will start with the older finishes.

***Antique Finishes***

Certain products can be enhanced in beauty by being finished to represent Swedish iron, burnt brass, antique gold, rusty steel, old copper, verde antique, old ivory, etc.

In each of these finishes the secret of the antiquing effect lies in the application of a smut coat, although the ground coat is important.

If the product is to represent some form of antique metal, the ground coat will be either aluminum or bronze powder in the proper vehicle; but in the case of old ivory, an ivory or white ground coat will be employed. The smut coat is an ordinary paint product, such as colors in oil or colors in japan, and may be used either in paste form or reduced with solvent to any desired consistency. It is applied over the ground coat with a brush, rag, or in any convenient manner, after which it is allowed to set, but not to dry thoroughly. Before actual drying takes place, this smut coat is rubbed off with a clean rag. Some of the pigment remains in the depression or in minute wrinkles or crevices of the surface, thus producing the effect of highlighting. Since the pigment must give the appearance of age, it should usually (although not always) be some shade of brown or black, the exact shade of pigment depending upon the exact effect desired. The

**A small but typical example of antique finishing . . . . on the head carvings on an ornamental mirror frame.**

shade of bronze powder used in the ground coat will also vary with the finish desired.

Antiquing is appropriate for such articles as lamp stands and holders, wall brackets, book ends, smoking stands, statuary, products imitating bone, metal furniture, picture and mirror frames, various metal novelties, and wooden articles made to imitate metal.

The application is not at all difficult and does not require special training, yet the effects are strikingly realistic and beautiful.

***Rusty Iron***

Although this should be classed as an antique finish, we are describing it separately due to the fact that it is produced in a different manner from the antique finishes just listed. In this case no smut coat is used. The rusty effect is obtained by mixing relatively large amounts of dry pigment with a suitable black lacquer or black paint. The dry pigment should be a mixture of burnt sienna, burnt umber and red oxide, and the proportion of each to the others will depend upon the particular effect desired. For a very red iron rust, use less burnt umber and more burnt sienna and red oxide. (Venetian red may be used also.) For a darker shade, increase the proportion of burnt umber.

After the dry pigments have been mixed into the black paint or lacquer until the whole is a thick consistency approximating a paste, the mixture is thinned down to spraying or brushing consistency and applied. The surface will dry flat and rather rough, thus simulating a well rusted surface. Care should be taken to avoid overloading the black lacquer with pigment, as this will cause dusting of the dried film.

***Colored Metallic Finishes***

Some very beautiful finishes having metallic lusters in pastel shades may be prepared by adding a small amount of pigment to ordinary aluminum or gold-bronze vehicle and then mixing the powder. The mixing should take place just before application, as jellying and darkening will occur if ready-mixed materials are allowed to stand. Also, the proportions of pigment to powder and vehicle should be specified by the firm supplying this material, as an improper balance will produce unsatisfactory results.

A similar and possibly even more delicate and transparent effect may be secured by mixing with the vehicle specially formulated stains that are both light resistant and compatible with said vehicle.

***Marbling Small Objects***

Objects small enough to be dipped may be given beautiful and novel effects in a very simple manner. After a ground coat of the desired color is applied (in any convenient manner) the object is dipped in water upon which a small amount of paint or lacquer is floated. The paint will not mix with water but it forms a floating film on the water's surface. When the object to be marblized is carefully dipped and withdrawn, part of this colored paint film clings to it, but does not cover the object completely. The film adheres in streaks and swirls resembling those found in marble. Slowly turning or twisting the object as

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"spraying truck frames"

"BRUSH two coats on zoo cages"

"BAKED on U. S. Army chairs"

"AUTOMATIC SPRAY on overhead door equipment"

"on lanterns, oil cans"

"WOOD and STEEL card table le

"AIR DRY spray on the back of Radiant Heaters"

"for backing of WOOD and METAL si

"coat castings that AGE IN WEATHER one year"

"dip metal parts of shovels

"PROTECTIVE PAINT for steel floor boards"

"dipping seat frames of subway c

"use on motor parts because of its resistance to gasolines, oils, and greases"

"spraying fishing rods

"backs of gas heaters and floor registers"

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it is being withdrawn enhances the effects produced. A large part of the ground color will remain visible.

Several colors may be floated on the water at once, so that the object may be streaked and swirled with as many colors as are desired while it is being dipped only once.

The colors may be so chosen and the dipping so manipulated that the object resembles actual marble. This makes an appropriate finish for vases, the metal bases of desk pens, statuary bases, and all small articles where real marble might be used were it not for the expense. However, most small articles have no connection with marble at all, and should not be made to imitate it. Nevertheless, this same method can be employed to secure effects other than marbling, which are both unique and pleasing. Brighter colors may be used and the dipping motion changed to vary the effect. Pencils are sometimes coated in this manner. The method is appropriate for all small objects where bright and varied colors are desirable.

### *Mottled Finish*

Another effect adapted to small objects is the mottled finish. In this process the objects are mottled with various colors against an appropriate ground coat. The ground coat is applied first and allowed to dry. The finisher mottles them by means of a sponge, rag or brush. The process is a rapid one, especially on a conveyor line. Either paint or lacquer may be used for this purpose, and if handled properly the resulting effect can be strikingly attractive.

### *Chromewald Finish*

This is a novelty finish that has been used effectively by manufacturers of kitchen and breakfast-room furniture. It consists of stain and wood filler combined. Oak and chestnut are the woods best adapted to this type of finish because of the wide variation in character of spring and summer growth. The wood is stained, high-lighted, and given a coat of clear lacquer. Then the colored wood filler is applied and wiped clean from the lacquered surface. Enough of the filler remains behind in the pores of the summer growth to produce an atractive contrast of colors. The process is not unlike that of antiquing with a smut coat, except that instead of a smut coat the stained wood filler is used, and the colors are different. Green is often used with the filler to produce the effect of Flemish oak. Red, aluminum and other colors also produce pleasing and novel finishes.

**An example of Chromewald finish. After the entire surface is given a clear natural or transparent stained finish (a thin unfilled finish) a paint or enamel of contrasting color is rubbed into the open pores of the soft grain afterward —followed, if desired, by a final coat of clear finish. In the example illustrated above, a painted stencil design was also added to the middle of each panel.**

*(To be continued next month)*

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Hundreds of manufacturers of many kinds of products use Day's Enamels. They have found that these materials may be depended upon to make their products outstandingly attractive. Our services consist of these essential functions:

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CHICAGO

# What the Customer Sees

by E. A. Zahn
Works Laboratory, General Electric Co.

**The sixth of a series of 20 short articles prepared by the author.**

NO MATTER how many dollars or thousands of dollars a piece of apparatus costs, the customer sees only the surface. The most inexpensive part of the entire machine [the surface] is the only thing that the customer has to view in forming his opinion as to how good the job is built. Imagine his reaction when he sees a turbine with a paint job all full of runs and dirt. His first thought is that he had better have the rest of it looked over very carefully, and generally he finds something else to complain about.

The painter or finisher is not entirely to blame when he doesn't have the proper place or equipment needed to do a good job, but he is at fault if he hasn't done all in his power to correct this condition.

If the job has a high class finish, the customer's reaction is always favorable. He considers his new piece of apparatus as a standard to work up to, and generally he gets busy finding fault with his old equipment. This, in many cases, means more work for those who turned out a good job on the first piece—and all because of the excellent finish.

When the customer specifies a certain finish and color he often submits a standard sample of color and gloss. Perhaps he has spent a lot of time in getting a sample to match an entire building full of other apparatus. Every precaution should be taken to give him exactly what he asked for, because he will be the final judge and his "sample" is many thousand times as large as the one he sends with the order. If he specifies prime coat only, it should look just as good regarding cleanliness and general neatness as a finished job; if the paint should get chipped or knocked off during shipment, he should see a clean surface on the bare spots.

Every manufacturing establishment should have its painting department located in a convenient place in which proper ventilation and clean surroundings are provided, so that the maximum benefit can be had from the painting operations.

The finishing of manufactured products really serves two purposes — "protection and decoration". The customer sees only the latter and this is his yardstick for measuring the former.

Of course, there are some manufacturers who, when buying equipment for their factories, have a standard "Complaint Sys-

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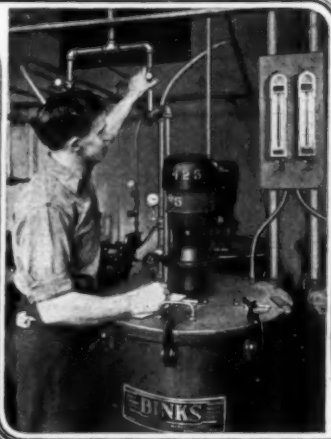


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tem". They know that they will issue a complaint long before they see the new machine. This type of customer is generally particular in all his undertakings. Results are naturally favorable to him eventually, because the manufacturer selling him equipment learns, after the first order has been filled, that this particular customer is hard to please and requires special attention.

Almost every buyer feels that, when he has signed an order for new equipment, perhaps the price is too high, and he begins to prepare himself to get his money's worth. He begins many weeks before the actual delivery of his purchase to picture its expensive appearance. This condition is especially noticeable when a customer has been notified of some delay in the shipment of his order.

Of course, there are times when some rather expensive mistakes in other work are covered and hidden by the final paint job; and if the finish is particularly attractive, the customer hesitates to destroy its appearance to find other failures. However, it is generally found that a manufacturer who is extremely particular with his finishing operations has used the same care throughout his work.

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## Finishing Baking and Drying Ovens

Two bulletins released by the Despatch Oven Co., 622 9th St. S. E., Minneapolis, Minn., contain specific information and illustrations relating to some of this company's oven installations for metal sheets, novelties, tractors, caskets, straw hats, refrigerators, cans and containers. These bulletins are identified as pages 105, 106, 201 and 202 of Section A-5.

## Color Beautifies Airplane Interiors

Recognizing the effectiveness of interior decoration, even in passenger airplanes, the American Airlines have delegated the decoration, interior design and color work of their new transport airplanes to Mr. Sterling B. McDonald, noted designer and colorist, who has studios in the Merchandise Mart, Chicago, Ill.

"The entire scheme of interior design on American Airlines' Flagships," Mr. McDonald says, "is best described as contemporary, or modern — new materials, new applications, for a new transportation. Color and form for a given purpose, unfettered by the bounds of tradition —pleasing, gay, yet tranquil.

"Airplane builders of the past, engrossed with engineering problems, did not give a great deal of attention to interior design of their ships from an aesthetic standpoint. But, we believe these new planes present an appearance both striking and acceptable to the tastes of all passengers. They are elegant in their simplicity, with a freedom from unnecessary embellishment.

"The motif of color and texture begins with the finely selected woods that are used for berth division panels and sides of the seat sections. Prima Vera veneer is applied to a sturdy though light weight composition, forming the upper walls and partitions, while quarter American walnut veneer, due to its color, is used for the lower section panels and trim.

"The upper berth walls and ceiling are lined with warm ivory-tan broadcloth, with a deeper shade of tan, piped with a deep blue leather, for the ceiling of the lower berth. Window frames are lacquered aluminum, in deep Chinese blue, with transverse curtains, in dull russet armure. The floor is carpeted with a high pile, mottled, carpet, the same hue as the curtains, but lower in tone value.

"Vealskin leather, to match the blue of the windows, is used as the covering for the stanchions and piping of the grey-blue pin-striped broadcloth upholstery for the passenger chairs. The dome, or ceiling over the aisle, is in ivory lacquer, outlined with satin finish aluminum bands, identifying the source of the indirect lighting.

"The pilots' control room is in non-reflecting colors of brown, and the exterior of the plane is practically the same as used for the present well known 14-passenger Douglas. Natural Dural aluminum striped and trimmed with the company's colors, International Orange and Bonnet Blue."

# BLONDE AND PICKLED FINISHES

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This is a sample of Glidden BLEACH-WHITE effect upon mahogany, with one application! A beautiful light blonde finish, achieved with a minimum of time and labor. Only Glidden has available this remarkable new 1-operation finish BLEACH-WHITE!

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First—Glidden BLEACH-WHI It makes possible the bleaching walnut, mahogany, gum and ot hard-to-bleach woods, *with only application!* Then, to bring out distinctive grains of these bleach woods, we have Natural Fille Glaze Coats in appropriate colo Water White Sealers, Wa White Clear Lacquers, and Wa White Flat Lacquers.

The completed finish develop with these reliable Glidden pr ucts is strikingly beautiful. *An stays that way!* No discoloring— yellowing—no complaints fr buyers. Write *now* for samp and full details of each prod in the Glidden blonde finish li

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# All Finishing Materials From One Concern?

THE FIRST two paragraphs of manuscript recently submitted by Mr. M. Langius on the subject of "Furniture Finishing" were so strongly and decidedly in favor of one side of a controversial point in connection with the purchase and use of wood finishing materials, that the Editor felt it would be interesting and enlightening to all readers to present some comments and qualified statements on this matter from other men experienced in furniture finishing. It is a subject that interests all purchasers and users of finishing materials, as well as the firms who manufacture and sell such materials. Mr. M. Langius says:

"In the finishing of furniture and other products made of wood, I am highly in favor of a complete finishing system wherein all materials are supplied by one concern if possible, as this assures the finisher of getting finishing materials that are thoroughly compatible and formulated to simplify production and to make for permanent beauty at lower cost. The use of a complete finishing system means that the responsibility for your finishes making good is centralized with one concern.

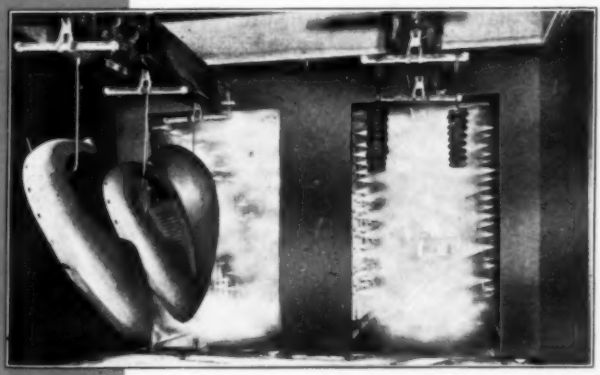
"There are factories, hundreds of them, that will purchase stain at one place, filler at another, shellac sealer at another, and lacquers or top coaters at still another house—any place, price being the first and apparently the only consideration. Then, when trouble arises, they wonder why their finishes have gone wrong."

*Comments from other well-informed and experienced men are as follows:*

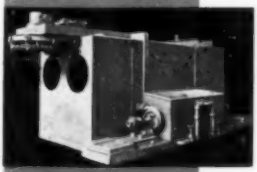
"The suggestion that all finishing materials in a plant be purchased from one concern is open to question. A good many makers of finishing materials, while they may make or furnish a complete line, specialize in a few items which they make better at the same price, or just as good at a lower price than others. As to compatibility of one maker of material to another, with the present day standardized methods of manufacture in finishing materials there is no danger of getting in trouble provided the materials are used as they were intended by the makers. Most finishing troubles can be traced to slipshod methods in the finishing room, or perhaps to bad drying conditions over which the finisher has no control.

"To illustrate my point: A wood filler, to be considered at all, must fill the grain of the wood properly; it must dry within a specified time; it should not raise up or turn gray under subsequent coatings. If a special make of sealer had to be used in

# Rust-Proofing MACHINES



Spray-type Rust-proofing Machine installed by Mahon in the Buick Motor Car Company's plant.



A Two Stage, Metal Parts Washer designed and built by Mahon to meet the specific requirements of a manufacturer.

## ...Designed and Built to Meet Your Individual Requirements

Rust-proofing operations in modern production finishing systems today, are unquestionably the one important factor governing the lasting qualities of any finish . . that is why leading manufacturers turn to Mahon engineers for the ultimate in efficient, properly co-ordinated rust-proofing equipment to fit right into their general production layout. Mahon engineers have built and installed rust-proofing machines in such plants as Ford-Lincoln, Buick, Pontiac, Oldsmobile, Chrysler, Dodge, Studebaker, Plymouth, Servel Corporation, Auto-Lite and Parker-Wolverine . . their wide and varied experience in solving production problems involving special equipment of this type is available to you without obligation. Your inquiries are solicited.

**M A H O N**

**THE R. C. MAHON COMPANY**

DETROIT — CHICAGO

Designers and Manufacturers of Metal Cleaning Machines, Rust-proofing Machines, Spray Booths, Ovens, and many other units of special production equipment.

order to get good results, it could not be considered a good filler." —HERMAN ERICKSON.

* * *

"If it is possible to get the desired materials and supplies from one concern, I do think it best, but very often some certain material from one house has advantages to such an extent that a one-concern finish is not to be recommended. The responsibility being centered with one concern is to be desired, if possible, so that responsibility can be saddled on the one concern and not shifted if something does go wrong.

"Purchasing certain materials at a price has, of course, been done away with to some extent . . . . with the price and solids being regulated . . . . On other materials such as shellac, filler and non-patented materials, there still is a price factor that enters in some plants regardless of other conditions. Many of these materials are not suited for each other, but the price is a controlling factor with many purchasing agents."—GARRETT F. HUIZENGA.

* * *

"Regarding the use of materials manufactured by one company, in my opinion that is out of the question. While I do not approve of buying a little from everybody, neither do I believe in buying materials from people that do not specialize in that type of material. For an example, would it not be foolish to think of going to a shellac manufacturer for lacquers or varnishes, and vice versa? I believe it is just as important for finishing material manufacturers to specialize as it is for manufacturers of other types of products.

"It is impractical for any finishing material manufacturer to try to manufacture too many lines, therefore I would suggest that the man in charge of the buying be a practical man thoroughly familiar with the requirements, and leave the technical responsibility to the specialized chemist. In order to do this it is necessary to buy from several different sources.

"As to placing the responsibility in case of trouble, it is usually possible to determine what is causing the trouble. We have less possibility of trouble when we stick to standard materials made by reliable concerns. It is a good policy to take the advice of a qualified chemist in regard to other materials to be used in conjunction with materials of his company's make. The chemist is in a better position to give advice due to his familiarity with the tests that are necessary in the development of any type of finishing material."—WM. COCKERHAM.

* * *

Among the several unmentioned points bearing more or less on this question, one is this: In some cases, where one concern does undertake to furnish all the finishing materials used by a customer, this company obtains certain specialized materials from other firms and then assumes full responsibility for their performance on the customer's work. Everyone recognizes the fact that in every industry, the several smaller concerns specializing in certain products and services occupy an important and desirable place.

---

Stick shellac for repairs can be obtained in practically any color.

ADVERTISING PAGES REMOVED

A comfortable fireplace living room furnished in maple . . . the market display of the H. T. Cushman Mfg. Co. in the American Furniture Mart at Chicago, Illinois.

## DESIGN, COLOR AND FINISH FOR

# *Maple Furniture*

WITH PUBLIC interest in maple furniture running high and furniture of this type ranking with the style leaders—attention is turned toward manufacturers who have enjoyed particular success in this field.

There are on the market today practically as many maple finishes as there are styles, ranging in color from a yellowish tan to a deep autumn leaf brown. Some are rich, deep and mellow and give a friendly warmth that cannot be equalled in any other type of wood; others are cold and dead, a lifeless assembly of lumber.

Styles vary from authentic copies of Early American pieces, gracefully designed and executed, to extreme modern numbers. Unfortunately a great deal of the maple produced has been of the heavy cumbersome variety; or it has swung to the other extreme of the light match-stick type. Traditional maple, to show its beauty, should be sturdy without being ponderous, comfortable without being grotesque, and it should be built with an eye to conforming with

by Rosalie Flank
American Furniture Mart

present living requirements . . . scaled to size and upholstered in plain solid colors rather than only in the plaid variety which has already outworn its welcome in many parts of the country. Modern drawer pulls and straight lines of modern styling add to the beauty of maple furniture, while a rich finish adds the necessary tones and highlights.

A company that has done a great deal to popularize Colonial American furniture, and which makes a line that has been well received by dealers and consumers, is the H. T. Cushman Mfg. Co. of North Bennington, Vt. This company tells some interesting details regarding their designs and the already famous "Cushman Colonial Finish."

According to the company:

"When our new line was originated four years ago, we conceived the idea of making our furniture with properly rounded and scuffed edges and corners to give it a desirable character. We use this decorative effect for maple and birch, just as carvings and fancy mouldings are used for mahogany."

The company points out that to carry out this appearance they had to develop a finish to correspond with the general feeling of the designs and the scuffing. They discovered that northern hard yellow birch was the wood of perfect texture, with the greatest dent-resisting quality by actual Government test, and the wood to which the finish could be applied most satisfactorily.

The company goes on to state that "this new finish, created and developed by us, requires nine distinct operations. A primary coat of special toner is applied, after which the stain is put on, wiped and blended by hand. The stained pieces are immediately inspected and then placed in a dry room having specially designed air-conditioning equipment to give the exact results required.

"After each article has been in the dry room a stipulated number of hours, it is removed, inspected and steelwooled; then the necessary coats of sealer and lacquer are applied, with a steelwooling operation between coats to give maximum smoothness. After lacquering, all articles are inspected; then they are rubbed, waxed, inspected again and packed.

"Competitors who have tried to copy the color and effect have failed because of the skill required and the expense of labor involved. It is a fact that the Cushman Colonial finish cannot be produced without these nine separate operations—and several of these operations must be performed by hand, which is considerably more expensive than certain mechanical operations, but it is the only way that the innate beauty of the wood can be brought out. Only the finest finishing materials are used. Several of these had to be developed especially for our process, as well as special resilient stain-resistant lacquers which are proof against various liquids, as well as heat."

Highlights and deep rich tones are the result of this special finishing process. The resilient stain-resisting quality of the lacquer furnishes a strong talking point for the dealer.

A special merchandising feature, which has been effective with dealers and consumers, is to provide each article with a printed tag giving a short de-

## Marble and Wood Grain

# *Faithful Reproductions*

These beautiful surface effects are obtained with the utmost economy in finishing, through the newly improved OXVAR Process. Distinctive and exclusive designs are possible with all the depth, tone, beauty and changeability of original wood grains and marbles. Reproductions by the OXVAR Process are applicable to practically all surfaces, including wood, metal, glass, wall board, and composition surfaces in both sheets and fabricated products. Already meeting the needs of hundreds of manufacturers, you can make no mistake investigating its merits and adaptability to production. Write us!

Matched and Panel Effects are not uncommon with the OXVAR Process. Metal table tops, with border, inlay and matched panel effects are outstanding achievements. These and many other beautiful surface effects, applied to products of all kinds, make for fast-selling lines.

●

*Our Art, Color and Design Department is ready at all times to assist you or your color design engineers in adapting this process to your production. We maintain an engineering staff, and complete service for installing the process.*

**OXFORD VARNISH CORPORATION, DETROIT, MICH.**

***Processes patented in the United States and foreign countries***

scription of the piece. For example, a mirror with a maple frame will carry a caption to the effect that the frame is an adaptation from a Cape Cod window; and suggestions are made for various groupings, explaining how the mirror may be used effectively.

## Changes I've Noticed in Furniture Finishing

IN REFERENCE to changes in furniture finishing during the past six years, there seems to be a trend toward the use of more metal because of less breakage . . . . and the saving in time, floor space, cost, and investment in articles in process of finishing. With bake finishes and ovens it is now possible to finish metal goods ready for shipment in one or two days.

The cost of finishing metal is probably less than it costs to produce an equally durable and attractive finish on hardwood, either in lacquer or high grade varnish. It seems that the use of synthetic varnishes and enamels is increasing, due probably to their more favorable cost, coverage, fullness and high gloss.

The supervision of finishing departments involves greater responsibility and alertness today because of production and cost requirements. It is important that the work be kept moving. A foreman must study the layout of his department floor space, and plan to eliminate any extra handling or trucking. Some finishing departments are so arranged that the operator takes his work from the rear, performs his task and then sets the article ahead for the next operation. In this way the work travels in a continuous route from the elevator, through the different operations, and back to the elevator, from which it is transferred to the warehouse or shipping room.

It is noticeable that finishing departments are cleaner now than they were some years ago. Rags, waste, sandpaper or excelsior are not allowed to accumulate on the floor or work benches at any time. Covered containers are supplied for all this waste material; thus the shop is kept cleaner and the fire hazard is substantially reduced.

Some concerns are equipping their spray booths with running water from an overhead spray. This water carries away the fumes from the operator, and is an improvement where the solvents have a strong odor.

Without any definite figure on the matter, it seems to me that more women are employed in finishing departments today than formerly. In some shops most of the work, except varnish rubbing, is being done by women—though it is hard for them to keep clean unless they wear coveralls. On small work, such as toys and novelties, where decorative effects are wanted, women are very efficient workers.—GEO. MCDOUGALL.

### Cleaning Small Metal Parts

Folder No. 33, describing and illustrating the Wheelabrator Multi-Rotary Table—the airless abrasive method of cleaning fragile or intricate metal parts—will be sent by The American Foundry Equipment Co., 555 S. Byrkit St., Mishawaka, Ind., to anyone writing for a copy. According to the company, the information contained in this folder is brief but very informative about the almost unbelievable money-saving possibilities obtainable through use of the Wheelabrator for cleaning castings or descaling forgings.

# Quick Turn-over

QUICK TURNOVER is important in all lines of business ... And in most cases quick turnover is dependent on eye-appeal. In these days of display competition, eye-appeal is of paramount importance. No matter how well made or what utility value your product may have, you are just out of step with competition if your finish is not up to par.

EGYPTIAN Finishes, including Lacquers, Lacquer Enamels, N-F-R (Synthetic) Varnishes and other industrial coatings, have been used to give products eye-appeal for over fifty years. During this time EGYPTIAN has specialized in industrial finishes of all types and has naturally gained a wealth of experience ... experience which is at your command to aid you with your finishing problems.

Call on us when you are in the market for finishes of any type. The chances are that one of our hundreds of standards will answer your requirements but if not we will be glad to formulate individual materials for your specific needs.

**EGYPTIAN · LACQUER**

THE EGYPTIAN LACQUER MFG. CO. • ROCKEFELLER CENTER • NEW YORK

# Painting Boats

by Orrie D. Maal

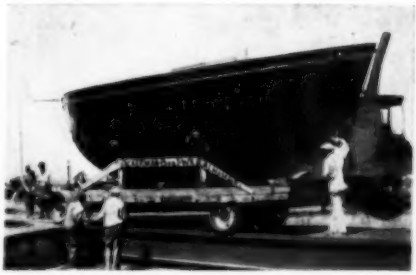


Illustration shows a new boat ready to launch from the workshop of Ackerman Boat Works, Alhambra, California

AT THE EDITOR'S request I am submitting herewith the proper method of finishing boats, as I find it here on the Pacific Coast. Mr. Ackerman of the Ackerman Boat Works, Alhambra, Calif., gave me the details while I watched the men working in his boatshop.

These people make all their boats to order, from a canoe to good sized cruisers.

After seeing their work I called at some other places and found about the same procedure, wherever high class work is done.

Beginning with the woodwork, which is to be painted like the outside of a boat, the procedure is as follows:

Caulking is done first. Then the entire surface is sanded as smooth as possible. After this sanding, the seams are painted with a heavy coat of pure white lead and oil. The workmen wipe all surplus paint off the planks with a rag; then putty the seams, using a good glazers' putty or a specially prepared glazing paste putty made for this purpose.

The coating of white lead and oil paint and the putty should be allowed to dry thoroughly; then sanded smooth, leaving the paint and putty only where they should be, and leaving a solid clean surface. Incidentally, this sanding in this particular plant is done with a portable electric belt sander, which is about the size of a small portable electric or air-rubbing machine.

After sanding the workmen patch in any spots that were missed during the first glazing. Then they apply a coat of boiled linseed oil and turpentine, mixing these two in equal proportions. This mixture must be heated and applied hot.

The next coat is pure white lead and oil or a good outside white paste paint. This is applied as smoothly as possible; when the coating is dry it is carefully sanded by hand until a perfectly smooth surface has been obtained.

## THIS CONTAINER REFLECTS A QUALITY PRODUCT

Made by Wilson & Bennett Mfg. Co., Chicago, Ill., this SHELL container is given the added beauty of Sherwin-Williams Finishes. Attractive design, clean printing, rich colors and a lustrous sheen make this a sales producing package.

Sherwin-Williams is Finishing Research and Engineering Headquarters. Sherwin-Williams Industrial Color Service is also your source of help in developing effective color treatments—cooperating with you or your Industrial Designer on all product finishing requirements. No cost or obligation. Write The Sherwin-Williams Co., Cleveland, and principal cities.

**SHERWIN-WILLIAMS**
INDUSTRIAL FINISHES

Next comes two coats of good oil sanding surfacer, leaving each coat plenty of time to dry thoroughly; then sanding each coat by hand until the surface is smooth.

The last two coats should be of high grade oil enamel (the spar varnish type preferred) in any color desired. These should be high grade materials made especially for the purpose. Naturally, the surfacers should also be of the best, as a finish job is only as strong as its weakest link; it's no use wasting good enamel over weak or cheap undercoats.

I've made some inquiries in regard to whether these coats would be best brushed or sprayed. Practically all boat builders agree on one thing: that is, the lead and oil coat should be brushed; the other coats are optional to the painter. However, none of the surfacer or enamel coats should be applied very heavy. A nice job done with thin coats will outlast the heavy job, and will leave very little room for cracking or peeling.

Now as to the wood trim on cabins, etc., to be finished in stained jobs or natural, the best procedure is as follows:

If colors are desired, use a good non-fading stain. If it is porous wood like mahogany or oak, fill with a good oil filler. When dry, apply three or four coats of spar varnish, using only turpentine for thinning, and giving each coat plenty of time to dry.

The natural finish on porous woods is produced the same as just described, only you leave out the stain. On non-porous woods like maple or birch or pine a 50/50 mixture of boiled linseed oil and turpentine, applied hot, makes an excellent foundation. After the treated surface is dry, proceed as before with three or four coats of spar varnish.

This procedure is used on all boats, whether they are to be used in the ocean or in lakes or streams, and if the boat is well taken care of, it will retain its original beauty for a long time.

Some boat owners wax the entire painted and varnished surfaces, outside as well as on the cabins. They claim more durability for the paint job and, as some say, more speed in the water because of less resistance.

For refinishing old boats it is natural that all worn or bad spots should be cleaned down to the wood; then patched in along these same lines and refinished. Care should be taken so that when revarnishing or reenameling, all the gloss of the old paint job is removed by sanding with fine sandpaper.

---

## V. J. Dolan Reports Good Business

Mr. V. J. Dolan, President of V. J. Dolan & Co., Chicago, Ill., upon returning from an extensive trip through Arkansas, North Carolina and Virginia recently, reported that he booked a record amount of business — more than on any previous business trip.

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## Metal Cleaning Bulletins

"Scientific Metal Cleaning" is the name of an attractive 12-page bulletin in which the operation of modern equipment for solvent degreasing and alkali cleaning is illustrated and described.

Another bulletin of four pages is entitled "You Run the Test In Your Own Plant; Then Decide About Solvent Degreasing." Both bulletins have pages 8½x11-in. and both are from the Detroit Rex Products Co., 13007 Hillview Ave., Detroit, Mich.

# As Simple as A-B-C

**There is nothing mysterious or secret about why an ever increasing number of manufacturers continue to use**

# 1617

Reg. U. S. Pat. Off.

## CLEAR METAL LACQUER

**A constant, unbroken production schedule, better mileage, avoidance of spotting out troubles and subsequent refinishing costs, plus a QUALITY that has been maintained year after year, have justified the use of 1617 for year 'round production.**

**It has excellent adhesion, is extremely hard and resists wear.**

**Try 1617—the Original Non-Spotting Lacquer—and become convinced.**

***Visit our permanent display at Metal Products Exhibits, Inc., Rockefeller Center, New York City***

## THE STANLEY CHEMICAL CO.

**EAST BERLIN, CONN.**

**LACQUERS - SYNTHETICS - ENAMELS - JAPANS**

***A Subsidiary of THE STANLEY WORKS, NEW BRITAIN, CONN.***

# What's New « «

## Compressed Air Drier and Filter

To cool the heated compressed air immediately after it leaves the compressed air receiver tank, and clean it of condensed moisture, oil and any other foreign matter detrimental to spray finishing, the Ruemelin Mfg. Co., 3860 N. Palmer St., Milwaukee, Wis., has developed what

**Cools, dries and cleans compressed air.**

is called a "Compressed Air-Drying System." The equipment illustrated in the accompanying cut is installed in the pipe line close to the air receiving tank. It consists essentially of three important units—the aftercooler, expeller and automatic drain trap.

According to the company's literature, the aftercooler (at the top) is a compact efficient unit which, by contra-flow of air and cooling water, effectively removes the heat units from the compressed air. The interior construction provides for thorough water cooling of the air baffles which "spread the air out in a thin ribbon or sheet" as it flows through the aftercooler, thereby assuring intimate contact with the cold surfaces.

The expeller or separator removes all water and oil suspended in a free state from the compressed air which has already been cooled. The efficient principle of its separating action, combined with the liberal proportions of the unit, assures dry air. The expeller has also proven very effective for removing water and oil when installed at the end of long compressed air lines.

The automatic drain trap automatically drains all accumulated moisture and oil from both the aftercooler and expeller and discharges such condensate into a sewer connection. It prevents water from building up in the cooling and separating system, which otherwise might be caused by oversight of hand draining.

Another unit—the type M strainer—which can be placed in the line ahead of the aftercooler inlet or near the service outlets where compressed air is used, is designed to strain out any pipe scale or dirt that may enter the compressed air distributing system.

## Fire-Resistant Finish for Canvas Duck

Another important industrial problem has been solved with the perfection of a new fire-resistant cotton duck, which even when exposed directly to fire, will not ignite. The new fabric is a product of the William E. Hooper & Sons Co., Philadelphia and Baltimore, who devoted more than ten years to research in perfecting the fire-resistant qualities of the finish.

"Fire Chief," as both the treated

**THESE TWO UNITS WILL**

# *Boost Your Production*

**They Offer You Greater Adaptability . . Greater Speed . . Longer Life**

The BU multiple head airbrush shown here is built to handle every kind of coating material hot or cold, coarse or fine and of every consistency from water to asphalt.

No airbrush made equals it in flexibility and long wear. Its foolproof construction makes it almost impossible to get out of order.

The airrubbing machine is typical of the complete Paasche polishing line. It will last for years producing a better finished surface and accomplish the desired results faster than hand rubbing. Paasche airrubbing machines may be used with wet and dry sandpaper, pumice, emery paper, felt or any other abrasive or polishing materials on every product from rough castings to Carrara marble.

● *Ask us to send you bulletins describing the Paasche manual and automatic air-equipment used in your industry.*

**Paasche Airbrush Co.**

1917 DIVERSEY PARKWAY . . . CHICAGO, ILL.

fabric and the finish itself are known, offers a unique advantage over other methods of "fireproofing" fabric in the fact that its fire-resisting properties are impervious to the action of water or the elements. In addition, the new finish waterproofs the fabric, makes it mildew-resistant and adds materially to its life.

"Fire Chief" is available either as a finished fabric, or as a separate finish known as "Hooperwood Fire Chief Compound." The compound is shipped in cans and drums and you can apply it, either by painting or spraying, to any type of cotton duck. Tests have shown that, when "Fire Chief" compound is applied to old covers, it not only improves their appearance, but, also adds appreciably to their life.

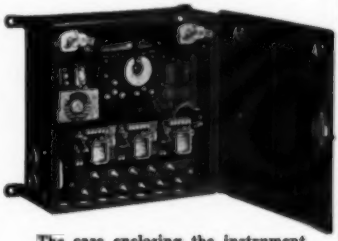
Obviously there are countless uses both for the finished fire-resistant fabric and for the "Fire Chief" Compound. In the general fields, active interest is shown for use of the new finish on awnings, curtains, salvage covers, bus and trailer construction, welding curtains, and for all kinds of machinery and merchandise covers—and in the marine and pleasure-boat fields Hooperwood "Fire Chief" is obviously a "natural" for hatch covers, life-boat covers and awnings.

## Oven Control Device

The General Combustion Corp., Engineering Bldg., Chicago, Ill., announces a new oven control device called "Combustrol." According to the company's bulletin, Combustrol is a safety unit for automatically and safely lighting the burners of gas-fired oven heaters or furnaces. It eliminates hazards resulting from pilot flame or electrical failure. Provision against overheating or damage due to fan, drive, or motor failure, as well as low gas pressure, can be made by the addition of simple accessories.

Combustrol can be operated in conjunction with automatic temperature control equipment of either electrical or air-operated type. It is applicable as well to banks of heaters whereby the main gas valve is prevented from opening until pilots on all burners are safely lighted.

The unit consists of two parts—pilot thermocouple and control cabinet. A switch is provided which places the unit in operation. The operator then starts the fan, and at this point Combustrol takes charge. There follows a predetermined cycle,

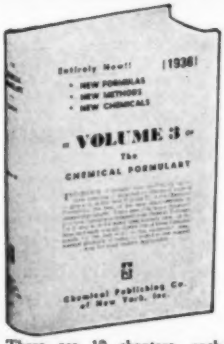


**The case enclosing the instrument measures 5½x14½x14½-in.**

automatically and safely carried out in lighting the burners, which cannot be changed or avoided. When the fan is started, the air flow relay is actuated by the flow of air, and sets the Combustrol in actual operation. The fan operates for a predetermined period of from 5 to 10 minutes so as to exhaust from the oven or heater any gases or explosive vapors that may have collected. At the end of this period the pilot gas valve opens and the spark plug ignites the pilot.

The pilot heats the thermocouple and when conditions are correct for safe ignition of the main gas burner, the main gas valve opens automatically, and the burner is lighted. Operation of the thermocouple is extremely rapid and reliable. The lighting has thus been accomplished automatically, and in a safe, unvarying cycle.

If the pilot flame fails, or the source of electricity is interrupted, the gas supply to both pilot and burners is immediately shut off, and

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*Volume III*

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***The Formulae Book for 1936!***

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the heater or furnace cannot be fired again except by repetition of the safety cycle just described. The air-flow relay prevents damage due to failure of motor, drive, or fan, by shutting off gas supply.

## Automatic, Vapor-Type Detrex Degreaser

The automatic, conveyorized, vapor-type of Detrex Degreaser illustrated on this page has been recently designed and built by the Detroit Rex Products Co., 13005 Hillview Ave., Detroit, Mich., for cleaning heavy-gauge metal parts. It is equipped with a two-strand, cross-rod type of conveyor, which has a variable-speed drive. There are 17 special fixtures suspended from this conveyor on 30-in. chain centers to handle the work baskets through the degreaser. Roller-type gravity conveyors at each end of the machine provide automatic loading and unloading.

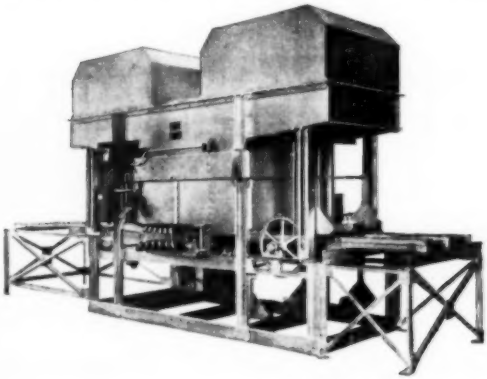
Electric immersion heaters, and thermostatically controlled magnetic relay and line switch are used. The machine is also equipped with a full automatic vapor level control device.

Parts are received on the gravity roller conveyor, loaded in grill-type metal baskets having perforated plate separators. These work baskets are automatically lifted from the conveyor fixtures and carried through the machine. While in the machine, the parts are subjected to vapor cleaning in pure solvent vapor —either Perm-A-Clor or Triad Safety Solvents being used. The baskets of work, on being conveyed out the opposite end of the machine, are automatically transferred onto the gravity rolls at the exit end. From here they are conveyed to the finishing operations.

The complete cycle of vapor cleaning requires only about 4½ minutes. The work is removed from the machine perfectly free of oil, and dry.

## Laboratory Mill

Eppenbach Inc., 45-10 Vernon Blvd., Long Island City, N. Y., announces a new vertical type colloid mill for laboratory use. According to the company's bulletin, the mill will emulsify, cut fibrous materials, grind hard particles, and homogenize . . . . makes it possible for the chemist to experiment on a small amount of material . . . . The by-pass arrangement makes it possible



**A conveyorized Detrex degreasing machine 20-ft. long; capacity 6,000-lbs. of metal parts per hour at a speed of 1-ft. per minute. This model is built in various sizes.**

# SURFACERS

PORES NEED FILLING for smooth - textured attractive finishes. Presdwood, celotex, natural woods, rough metals and porous compositions need quick-drying, easy-sanding, high-bodied surfacers—in short, our CEL-U-LAK Surfacers.

These have unusually high body, coupled with low viscosity, permitting a heavy application by spray; air dry to sand in 1½ hours, force dry at 125° for 20 minutes. They are ground finely and have phenomenal adhesion and resistance to moisture.

CEL - U - LAK Surfacers are standard in white, ivory, dark grey and red. They have for 6 years been an outstanding successful item in our line. We suggest you examine it for your requirements.

*The*
VARNISH PRODUCTS CO.
CLEVELAND, OHIO

THE STANDARD LOW-BOILING SOLVENT
FOR NITROCELLULOSE LACQUER

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STRONG SOLVENT . . . HIGH PURITY
LOW COST . . . QUICK EVAPORATING

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World's Largest Producer of Alcohol Solvents

for the operator to fill directly into bottles and containers without stopping the mill.

The machine is self-cleaning or can be taken apart if so desired. All results obtained on this mill can be duplicated on large production units . . . . working parts are made of stainless steel. The bowl and outlet are made of an acid-resisting aluminum similar to that used in kitchen utensils. The mill is driven by a ¼-h.p. universal motor.

## Removes Oil, Water from Air Line

The DeVilbiss Co., Toledo, Ohio, announces a new improved extra-heavy-duty condenser, Type HP-504-2, which effectively removes oil and water from the compressed air line. Within the condenser are baffles and filter pads conveniently located in such a way that they can be removed and replaced without disconnecting the condenser from the air line.

Air inlet and outlet are both in the top cap which is fastened to the body of the condenser by means of a companion flange, thus permitting removal of the body of the condenser without disturbing the air line. The filter pads, which fit snugly around the inlet tube and interior wall of the condenser tube, stop passage of any oil, water or dirt, and remain effective up to the point of saturation. The average life of these pads is three months. A drain valve at the bottom permits drainage of accumulated condensation.

The condenser is 4-ft. 8-in. long, has a tube diameter of 6-in., takes a 2-in. pipe thread on inlet and outlet tubes, and weighs 140-lbs.

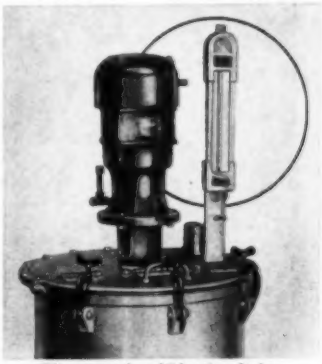
## Hydrostatic Gauges for Paint Mixing

A new hydrostatic gauge for paint mixing tanks is now offered by the Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill.

Assurance of absolute uniformity and viscosity of paint is obtained by "weight" mixing. A clear vision gauge shows the exact weight of lacquer and thinner added to the tanks. In this way any desired viscosity can be matched time after time.

The new gauge also serves as a "Level Indicator," besides the weight calibration; it is also possible to read at a glance just how many gallons of liquid are in the tank.

The Binks gauge is simple, accurate and dependable. Hydrostatic in principle, it balances the weight of the liquid being measured against the known weight of the liquid in the U-tube. Connection to the tank is by means of a flexible copper tubing encased in a conduit. Binks hydrostatic gauges are calibrated only for Binks mixing and pressure tanks.



The gauge is within the circle.

## Eliminates An Operation

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# Absolute Stain Seal

1 *Absolute* Stain Seal provides a Stain and Sealing Coat in one operation.

2 *Absolute* Colors are fast to light, acid anilines being especially selected to give a permanent fade-proof color.

3 *Absolute* Stain Seal can be dipped, sprayed or brushed and will show more uniformity and transparency than any Water Stain or Oil Stain.

4 *Absolute* Stain Seal will give the same result in one application, that is ordinarily obtained by dipping in a water stain and when this is dry applying a wash coat of Shellac or Sealer.

5 *Absolute* Stain Seal will dry much harder than a wash coat of Shellac and consequently will give much easier sanding.

6 *Absolute* Stain Seal is reduced with water, affording a large saving as compared with other reducing agents.

*Not an Experiment—Used by Leading Manufacturers*

**FREE WORKING SAMPLE or 5 GAL. CANS at DRUM PRICE**

## WOODFINISHING PRODUCTS CO.

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# Good "Build"

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## is one of the many qualities of LEOLAC LACQUER WOOD SEALER No. 66

Leoline—Paints and Enamels

Leolac—Lacquers Leosyn—Synthetics

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## Thermovar Finishes

Excerpts from a bulletin released by Technical Finishes Corp., 155 N. Clark St., Chicago, Ill., reveal the following statements about Thermovar finishes:

A series of finishes using a 100% synthetic resin vehicle, made from a phenol-aldehyde chemically reacted with tung oil. They have unusual adhesive properties; are extremely tough; have great resistance to chemicals, abrasion and impact, and a high index of elasticity; set dust-free in 30 to 60 minutes; are hard enough to permit handling or the application of subsequent coats overnight; reach their maximum resistance after a period of 4 to 11 days, due to the fact that they dry by polymerization.

Thermovar finishes dry from the inside out, forming no skin (the result of oxidation) but curing out into an inert homogenous film that eventually becomes insoluble and infusible—and which is not subject to oxidation. They may be air-dried or force-dried (at temperatures up to 225°F.) without any modification. Slight modification of the vehicle permits baking at temperatures of 200° to 400°F. Whether air dried or baked, the finish has a high and enduring luster.

These finishes are available in amber, clear and colors.

---

## Dupor Respirator

A new Dupor Plate Respirator manufactured by H. S. Cover, South Bend, Ind., features a greatly enlarged area in its double filter chambers. The filter aperture for both pads measures more than 24-sq.in. Dead air space has been cut to an absolute minimum. It is called Bulb Valve type No. 24, and has been approved by U. S. Bureau of Mines.

The face piece is of standard (patented) Dupor construction with large off-set filter plates attached. Filtered air passes easily between

Showing filter pad in position.

the plate extrusions to the protected opening and into the respirator interior. The marginal edge of plate has ingenious, inwardly curved edge to securely anchor filter pads and prevent leakage.

This new construction principle not only assures a larger filter area for easier breathing but greater comfort to the wearer because of unobstructed vision.

---

## Pressure Cup Spray Gun

A pressure cup assembly, with regulator and gauge which attaches directly to Binks standard Thor Model 7 or Thor Model 2 spray guns, has just been announced by the Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill.

The new assembly is recommended for all types of materials which are of such consistency that they cannot be sprayed successfully with a syphon-feed cup. It is also ideal to duplicate pressure-feed conditions in laboratory testing or for production painting requiring pressure conditions with small quantities of materials.

A specially cast cover fits snugly over the handle finger-rest, assuring a firm fitting cup. Regulator and

# When the *finish* is the *start!*

Unless the *finish* of your product appeals to the eye, you have lost the *start* of your sales argument. *Eye-appeal* is the first step in selling, and the finish is of prime importance . . . To be sure of a fine finish—a potent eye-appeal—use

SILVER GOLD COPPER

## SUNBRITE BRONZES

Besides giving you an improved finish, Sunbrite Silver Bronzes afford you several economies. The increase in coverage—the use of less lacquer—the reduced time required for rubbing—all aid in showing a marked saving in production costs . . . More than 200 colors and shades are carried in stock, ready for immediate shipment . . . And we are prepared to match promptly any special shade desired . . . Send for free sample, and try it on your product. You will be amazed at the superior finish obtained . . . Prices and methods of application will be furnished on request.

SUNBRITE

**The Mitchell-Mayer Co., Inc.**

*Complete Industrial Bronze Finishes*

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## *IMPROVE YOUR FURNITURE FINISH AND SAVE MONEY!*

## Use WALKER'S SEAL-LAC No. 64

A new furniture *sealer* developed by laboratories of H. V. Walker Co. This product dries rapidly, has high solid content, sands easily with exceptional building qualities. Economically priced. Suitable for use under varnish or lacquer. Write NOW for sample and full information.

**H. V. Walker Co.**

ELIZABETH, N. J.

SEND THIS COUPON FOR FREE SAMPLE

H. V. Walker Co., Elizabeth, N. J.
Gentlemen: Please send me Free Sample of SEAL-LAC No. 64.

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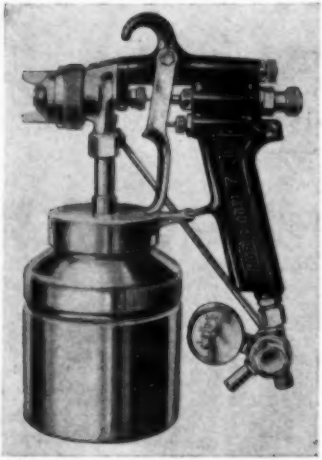

**Attaches to any standard Thor 7 or 2 gun.**

gauge are well away from the danger of clogging with paint, even when the cup is tipped at right angles. The outfit is equipped with air-adjusting valve, release and safety valve and air-pressure regulator to control pressure on cup; easily attached and detached; quart capacity cup.

## Standard Varnish Works Promotes Paul Sommer

The Standard Varnish Works, 386 Fourth Ave., New York, N. Y., announces the appointment of Paul Sommer as Director & Vice-President in charge of plants, effective October 24. Mr. Sommer has an enviable record in the development, manufacture and sales of varnishes,

Paul Sommer who has been made Director and V.P. in charge of plants for the Standard Varnish Works of New York, N. Y.

paints and lacquers. For 15 years he was connected with the National Varnish Co., of Long Island City, resigning his position as Technical Director and Industrial Sales Manager in 1928 to organize the North Bergen Varnish Corp., for which company he established an excellent reputation. He sold his interests and resigned from the presidency of that company early in 1934 and joined the Standard Varnish Works as Industrial Sales Manager.

## Protecting and Preserving Steel Surfaces

An interesting article covering nine typewritten pages, bound in a heavy paper cover, explains in detail the Synhibit Process (formerly called the Devictco Process) of protecting and preserving steel surfaces. This article has recently been prepared by Thompson & Co. (industrial and technical paints) P. O. Box 6757, Pittsburgh, Pa.

Quoting from a letter by Mr. J. V. Thompson, Vice President:

"The subject of protection of exposed structural steel surfaces is a matter of such constant interest, and this new method of treatment is causing such a great deal of comment by engineers, chemists, etc., wherever they have heard of it, that we feel the majority of your readers may be interested."

***EIGHTEENTH CENTURY FINISHES***

**of outstanding beauty may be easily achieved by the use of L-MAC-E materials especially formulated for this purpose . . . These products include . . .**

**L-MAC-E 18th Century Mahogany Stain Powder, 1X240**
**L-MAC-E 18th Century Mahogany Filler, 3993**
**L-MAC-E Mahogany Shading Stain, 13637**
**L-MAC-E Water Stain Solution, *13475**

**Recommended to minimize raising of the grain and eliminate the need for a first wash coat*

**The powder is reduced and applied by spray as a medium wet coat and when dry given a shellac wash coat. It is then sanded and filled, again shellaced, then shaded. Finish with sealer and lacquer. Finished panels or working samples of the 18th Century and also Blonde Maple gladly submitted upon request.**

*Write for these to-day*

**THE LAWRENCE-McFADDEN COMPANY**

**1400-02 Frankford Avenue** PHILADELPHIA, PA. ESTABLISHED 1875 **427 West Erie Street** CHICAGO, ILL.

# LARCOLOID

## *The Perfect 1-Hour Dry Enamel*

Where speed, perfect adhesion, durability, protection or lasting beauty is desirable, use LARCOLOID.

Larcoloid air-dries, dust free, in 15 minutes—dries hard in 1 hour to a porcelain-like surface with acid, alkali, hot oil and salt spray resistance. Force-dry or bake if you wish.

Larcoloid is now being successfully used on practically all sorts of products and for maintenance protection on equipment and buildings.

Larcoloid has been the answer to all kinds of finishing problems. We will welcome the opportunity to tell you more about this sensational finish. Send us your inquiry.

***Larkin Co Inc.*** **PAINT DIV., Buffalo, N.Y.**

**Manufacturers of Primers, Enamels, Varnishes and Japans**

## Finishing Room Fires

IN A LARGE shop that does enameling and plating for the trade, fire prevention had been particularly stressed, approved extinguishers had been hung in convenient locations and a nightly check up was made to remove any carelessly-thrown rags, waste, paper or other inflammable material. However this shop has had two fires, notwithstanding all the precautions taken.

The first fire was caused by one of the company's outside salesmen taking a customer through the shop to show off the equipment. When Mr. Salesman came to the electric oven he proudly pointed out the expense his firm was going to, to maintain exact temperatures and obtain uniform results. He manipulated the heat-control levers and switches to impress the customer with his all-around familiarity with this expensive installation. But he forgot something important. He left the heat turned on full volume while he and his customer went blithely on their way. That night the watchman discovered smoke and flames pouring out of the oven; he turned off the heat promptly, but the damage had been done. An oven load of enameled work was ruined, and repairs to the oven were in order.

The second fire was one of those unforeseeable ones which, up until that time, had shown no possibility of occurring. An operator was loading a gas-heated oven with black japanned work. The day was cold, so while loading the oven he hung his supply bucket of black japan to a long hook in the oven to warm and thin. This brought the container closer to the heat and it warmed up very rapidly. Spillage on the outside of the bucket melted and ran down to the hot metal and ignited; fire crawled up the side of the bucket and ignited the contents, causing same to boil over, which in turn set the rest of the enameled work on fire. Flames poured out, setting fire to the ceiling and side wall of the building. The fire department was called and eventually the blaze was brought under control, but not before several hundreds of dollars worth of damage had been done. Experience is an expensive teacher. Now the heating and thinning of the black japan is done by setting the container in a tub of water which is kept at or near the boiling point.—W. S.

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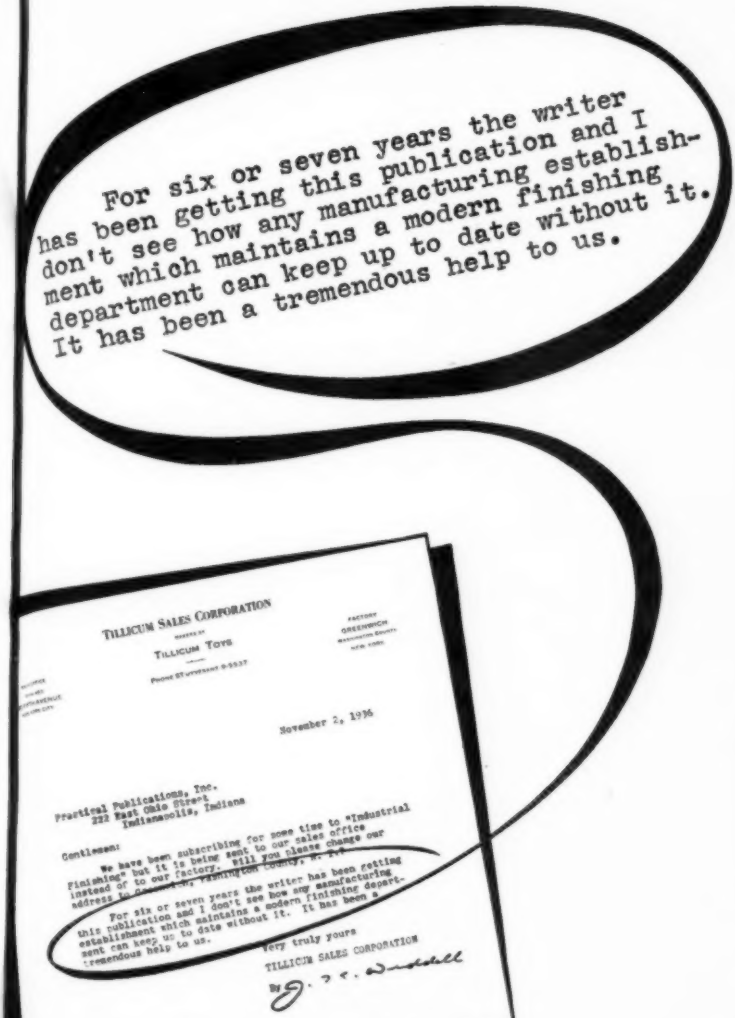
## What Causes Blooming; How to Avoid It

WHAT finishers generally refer to as "blooming" is a bluish cast that forms on the surface of a dry lacquer film. It's a common occurrence in the finishing room, and many finishers have lacquer manufacturers agog about it, little realizing that 95% of blooming is caused by conditions in the finishing room. Such impurities as smoke and ammonia fumes, or too much paraffin oil on the floors of finishing rooms and warehouses, may produce vapors which condense on the finished lacquered surface and cause blooming. In fact, any condition that allows a film of smoke, oil, dirt or some similar substance to form on the finished work is likely to produce blooming.

After a lacquered surface has


For six or seven years the writer has been getting this publication and I don't see how any manufacturing establishment which maintains a modern finishing department can keep up to date without it. It has been a tremendous help to us.
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TILLICUM Toys
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Practical Publications, Inc.
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Gentlemen:
We have been subscribing for some time to "Industrial Finishing" but it is being sent to our sales office instead of to our factory. Will you please change our address to
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Very truly yours
TILLICUM SALES CORPORATION
By J. F. Waddell
JFW:RB
REPLY TO GREENWICH, NEW YORK

been rubbed a short time, a bloom sometimes appears. In this case it may have been caused by: 1) rubbing before the film had dried hard; 2) rubbing with too much pressure; 3) rubbing with too coarse pumice stone; 4) using insufficient lubricant while rubbing; 5) the presence of small quantities of moisture and oil in the film due to oil and water being in the spray system; 6) excessive humidity which prevents the film from drying thoroughly; or by any set of conditions that would cause the scouring or deep scratching of the film before it becomes thoroughly hard and dry.

One of the most frequent causes of blooming is the use of a rubbing oil that contains a sticky, greasy residue which can not be wiped off clean.

Blooming should not be confused with blushing, which takes place before the film is dry; blooming occurs after the film is apparently dry.

My recommendation for removing a bloom is: 1) first sponge off the work with lukewarm water and castile or a neutral soap; 2) then rinse thoroughly with clean water and, 3) wipe dry with moist chamois. Sometimes where the blooming is extremely bad, it is advisable to use a little 4/F pumice stone or rottenstone with soap and water. If necessary, go over the work after washing, with a good polish, one that does not leave a greasy film to catch the dirt.—THOS. C. ZINO (With Mayer and Lowenstein).

## Cleaning Brushes

SMALL foreign substances contained in brushes when purchased, or after they have been used, present a problem in the brushing of enamel, varnish or lacquer on any surfaces that are to be given a high quality smooth finish.

I have tried various methods of cleaning brushes and use the following most of the time:

A new brush should be washed first in gasoline and then in paint-and-varnish remover. If the brush has been standing in solvent in a brush holder, the gasoline wash may be eliminated. When the washed brush has become almost dry, take a fine-tooth comb, hold the brush to the light, and draw the comb through the brush several times until the fine specks or dust in it disappear. The brush must be continually held to the light during this combing so you can see the results.

*Just the machine . . .*
*for coating small objects*

FILWHIRL
ENAMELER

It is essential that bristles at the ferrule be given as much attention as they are nearer the ends, because any dirt or dust or lint embedded in the brush near the ferrule, and left there, will work down into the paint or varnish later. Slap the brush vigorously over the palm of the hand, carefully noting if the bristles are free from one another, and if all foreign particles have been removed.

When the surface to be painted is in condition (tack-ragged, if necessary, to remove dust) start the work, being careful to keep the brush well loaded with paint about half way up the bristles. Use particular care when dipping the brush into the material, and removing it from same, as turned-in edges at the top of the container will cause trouble if allowed to pile up with paint. I use a cup and when I wipe the excess paint from the brush, it all flows back into the cup. For automobile refinishing, I like a 4-hour enamel combined with a portion of synthetic clear which I use quite often.

When through with a brushing job, wash the brush in a mixture of gasoline and turpentine and place it in brush holder, or clean it thoroughly with paint remover and wrap it in clean paper. Then it will be clean and in first class condition for use again when you're ready for it.—WM. H. EDWARDS.

## Finishing Fancy Parlor Furniture

IN THIS article I am describing a process for finishing exposed parts of parlor frames and odd pieces of living-room furniture, that eliminates a good share of the sandpapering, staining, filling and highlighting that we formerly did, and yet the finished articles look as well if not better than pieces finished by the old methods. The first step is to see that the surfaces are really smooth. If there are any rough places, take some No. 4/0 finishing sandpaper and sand them out. Otherwise they will show on the finished product. Then blow off all surplus sand dust with an air gun.

Apply a ground color mixture; for example, half and half of burnt sienna and burnt umber in a sufficient quantity to mix well with about 1½ pints of naphtha and ¼ pint of japan drier.

IT CUTS COSTS, puts on better surface coatings, speeds up production in product-finishing departments. Use the FIL-WHIRL ENAMELER for coating such items as nuts, bolts, coil springs, hair pins, wood and metal toys, and the like . . . you'll find it will coat every day many more articles, with no loss of enamel. Send us samples of your products; we will finish and return them for your inspection. . . . No obligation whatever. Write us TODAY!

THE LEON J. BARRETT CO.
Grafton Street, Worcester, Mass.

This mixture must be stirred thoroughly and applied all over the frame surfaces you wish to finish. Apply it the same as paint, making sure you cover thoroughly all the surfaces to be finished. You must work rapidly or the surfaces will show streaked. Then wad up a clean coarse cloth, and use this to remove all the surplus stain. Follow with a 4-in. bristle paint brush, and brush the stained parts thoroughly, especially in grooves, inside corners and carvings. Otherwise the surplus stain in the grooves and corners will show muddy on the finished article.

After dry-brushing the stained woodwork, rub the stained surfaces lightly with a wad of fine steelwool wherever you want highlighting to appear. Do not rub too heavily with the steelwool; use it with light pressure and quick movements so as to leave a more fine natural blending of the stain and highlighting. Next, use a dry brush to brush off very gently the small bits of steelwool which so often remain on the frame. This brushing will also have a tendency to blend in the highlighting.

To perform all the above operations on a davenport frame—with carved front and ends, moulding in back, and carved stumps—requires about 15 minutes. This is being done in our shop day after day, and I have been timing it regularly at from 10 to 14 minutes.

Your next step in this process is to let the frame dry overnight or better yet, 24 hours if possible. Then spray on a full coat of lacquer sealer or shellac. Allow this to dry for about five hours; then sand the surface with fine finishing paper. Follow by spraying on two full coats of clear lacquer. When this is dry, rub the surface lightly with steelwool—good fine steelwool; then wax and dust with rottenstone. Or, after your two coats of lacquer are thoroughly dry, rub with pumice stone and oil. If a flat finish is desired, give your article a full coat of shellac for sealer, a coat of good tough lacquer, and a coat of flat lacquer. Frames finished by this method can be completed in from 24 to 36 hours, ready for the upholstering department.

When finishing chair legs or stumps by this method, throw about 25 of them into a tank containing a suitable quantity of the prepared stain; remove them and leave them on a rack to drain. Then proceed with your regular operations, the same as on the frame. To show how rapidly this work is done, we have men (and I have done it myself) who can complete from 100 to 125 Queen Anne Carved legs in one hour.—ROBT. DANIELS.

SYNTHETICS
• ALL TYPES for
• ALL PURPOSES
• ASK FOR DEMONSTRATION
ROWE PAINT CO.
Long Island City, N. Y.

## Removing Moisture and Oil From Air

MOISTURE and oil in the compressed air supply lines cause many operating troubles in pneumatically-operated equipment. Moisture is naturally present in all atmospheric or "free

air," the water content varying with the humidity. This moisture condition is still further aggravated by the higher temperatures and humidity during the summer months.

The quantity of moisture in 1-cu.ft. of compressed air, at 100-lbs. gauge pressure, is 7½ times the quantity of moisture in 1-cu. ft. of free air at atmospheric pressure. On account of the high temperature caused by air compression (450° to 500°F. in single stage compression) this moisture is held in suspension in the form of steam or hot vapor, and is not released until its temperature is again reduced to the atmospheric temperature.

This super-heated compressed air gradually loses its heat as it travels along the pipe lines. The moisture thus released settles in the pipes and low points so that water is discharged from all available outlets.

Water and oil released by condensation in the air lines causes numerous operating troubles. Some of the more common troubles due to condensed water are:

1) Dilution of paint spray mixtures, and an unsatisfactory finish.

2) Clogging of sand valves in sandblast apparatus.

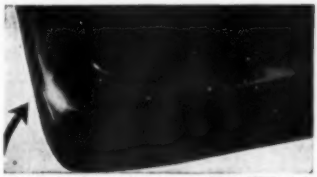
3) Corrosion of steel abrasives.

4) Freezing of pipe lines in cold weather.

5) "Water-hammer" due to accumulations of water at low points.

6) Loss of power and pressure due to reduction of carrying capacity of air lines.

7) Excessive wear of pneumatic rubbing machines, resulting from lubricant being washed away from bearing areas.

This half of Auto Fender was CLEANED with a Magic Tack Rag before finishing. Note the smooth, deep luster. No blemishes, specks, lint or sand particles to mar the finish.

**"MAGIC" TACK RAGS**

**IMPROVE FINISH 100%**

MAGIC TACK RAGS clean every surface before finishing—bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry—are dust proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

**Wm. A. Juergens Co.**
4036-40 Lagrange Street,
Toledo, Ohio, U. S. A.
If your dealer does not carry Magic Tack Rags, write us for sample.

the JETAL process

*A Simple Way to*

**BLACKEN Iron and Steel**

**The Jetal process colors iron or steel at low temperature, by *immersion*, to a uniform and brilliant black. It is a complete finish in itself, and will not chip, scale, peel or discolor — also an excellent bond for subsequent finishes that require high temperatures. Ask for circular and send samples to be JETALized.**

**ALROSE CHEMICAL CO.**
*Executive Offices:* 80 Clifford St.
**PROVIDENCE, R. I.**

Oil in the compressed air lines may cause:

1) Disintegration of rubber gaskets and diaphragms on compressed air lines.

2) Destruction of coatings in spray painting.

3) Failure of adhesion in "mettallizing" processes.

4) Carbon formations.

5) Rotting of air hose.

6) Contaminating of liquids in compressed air agitating installations.

The most practical method known for the removal of moisture and oil from compressed air is to thoroughly cool the air to a condensation temperature. Cooling the air removes the heat caused by compression so that the entrained moisture, which is carried in the form of a vapor, is precipitated.

A device is available for cooling the compressed air when it leaves the receiving tank. This cooling is achieved by effective water cooling in combination with the application of several important scientific principles for rapid heat exchange.

The water of condensation is precipitated as the air flows through the cooler. The moisture, which is in the form of a fine mist or fog, is centrifugally extracted by another unit which is called the "expeller." Condensate from both the cooler and expeller is automatically discharged from the system by a drain trap.—RUEMELIN MFG. CO.

We originated "BLONDE" Wood Furniture Finishes

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Reg. U. S. Pat. Off.

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Inquiries—Box 3610 Merchandise Mart Sta.

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**STICK SHELLAC**

Better than anything else for repairing imperfections in wood, marble, etc. Made in 70 colors to match all finishes. Write for FREE Color Card and descriptive Booklet.

THE M. L. CAMPBELL COMPANY

706 East 19th Street

KANSAS CITY, MO.

## Automobile Colors at Paris Exhibit

EXHIBITS at the Salon de l'Automobile at the Grand Palais in Paris, from October 1 to 11, indicate that airflow designs are rapidly displacing straight lines and sharp angles, according to P. H. Chase, color specialist of the Duco Color Advisory Service, who made a complete survey of the exhibits. A close investigation reveals many improvements, he says . . . .

The increased use of brown alone and the extensive use of greyish tones of blue, green and brown were most significant in the color treatment at the Salon. Black still leads as the predominating color, while composite browns containing grey and even beige were prominent. Black led with approximately 20% of the exhibits, blue following closely with 19%, and then came grey, green, yellow, maroon, beige, brown, and red, in the order named. Although brown was low in percentage, it represents a notable increased use of that color over previous recent years.

In the use of colors, blues and greens were chiefly in medium values, including some fine shades of Royal and Belgian blue and emerald green. Yellow included several examples of lighter shades of old ivory value. The number of maroons and reds was limited. The use of metallic colors was very much on the increase.

The disc wheel seems to have lost some of its former popularity in favor of the steel wheel with spokes and, to some extent, the wire wheel. Neither the disc wheels nor the wire wheels showed any change in color application, but the steel-spoke wheels showed a great variety of decorative ideas. In some cases the spokes and rim were finished in contrasting colors, while in others the spokes were decorated in filets in all sorts of combinations. Quite a few of the cars were fitted with plates encasing the upper part of the back wheel, while a few of the sports models also had similar plates over the front wheels.

Chromium plated metal was used on more cars this year than at the previous Salon, but on very few cars was it used for a belting of importance. Narrow strips and small ornamental applications on the louvers were in chromium. While a majority of the radiators was finished in the same color as the car, many were chromium plated and a few finished in the dull, old-fashioned style. Most of the lamps were chromium plated, but some had lamps finished in the same color as the body. There was quite a number of cars with lamps painted in black irrespective of the color of the car. Some had lamps encased on the top of the front fenders.

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Finishing cars in one color is apparently growing in popularity, and this increased use of one color for the bodies has influenced the same idea for fenders. On some cars a slightly darker shade was used for the fenders. Many cars had moulding that was stressed by very narrow filets of color but these mouldings, unlike the sraight belting that was popular a few years ago, were often curved to form a fancy decoration. The exhibit did not contain any examples of freakish color or color distribution, with the exception of one car finished in rose pink, ornamented with a sweeping black stripe and upholstered in black leather.

## Handbook of White Pigments

A "Handbook of White Pigments," prepared by the Krebs Pigment & Color Corp (Division of E. I. du-Pont deNemours & Co., Wilmington, Del.) to make available to pigment users a convenient book of reference, is ready for distribution. It describes each of the company's white pigments briefly, indicating its field of use, consistency, physical and chemical characteristics and other pertinent information.

The handbook describes pigments under three headings: Lithopone (zinc sulfide pigments); pure titanium dioxide; and extended titanium pigments. It also contains tables of bulking values of white pigments, a tabular summary of consistency range, special properties and principal uses of white pigments and conversion tables giving comparison of metric and customary units.

## The Chemical Formulary; Book III

By insistent request, Volume III of THE CHEMICAL FORMULARY has been brought out a year ahead of schedule. Every formula is different from those given in Volumes I and II. All formulas are new and show modern up-to-date methods as used by industry throughout the world. Many new technicians have contributed information hitherto unpublished and unavailable. A comprehensive index for all three volumes is included so that reference is greatly simplified.

Each one of the 19 chapters includes more modern formulas in its field than any book on the specific subject. It thus takes the place of nineteen books in the following fields: Adhesives; Paints, Lacquers, etc.; Cosmetics and Drugs; Emulsions; Farm and Garden Specialties; Food Products; Beverages and Flavors; Inks and Marking Compounds; Leather, Skins and Furs; Lubricants, Oils, Fats; Materials of Construction; Paper; Photography; Plating; Polishes, Abrasives; Pyrotechnics; Rubber, Resins, Waxes, Plastics; Soaps, Cleaners; Textiles, Fibers; Miscellaneous Specialties.

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Protective Coatings — Finishing Varnishes—Primers and Surfacers

The book contains nearly 700 pages 5½x8½-in., is cloth bound, lettered in gold, and measures 1½-in. thick. It sells for $6.00, through Practical Publications, Inc., 222 E. Ohio St., Indianapolis, Ind.

## Automobile Designs and Colors at London Exhibit

The general trend toward lighter colors was the most noticeable feature of the 13th International Motor Exhibition which opened in London, Oct. 15. There is also an increased use of chromium plating for both fittings and striping.

A total of 442 models were shown . . . . 63 pleasure cars by 54 manufacturers, 34 of these being British, 15 American and 14 Continental. The remainder of the exhibits were shown by 39 coach builders and 11 caravan or trailer manufacturers. Every car in the exhibit has a cellulose lacquer finish, except three in Dulux. The cars finished in metallic lacquer amounted to 12%, as against 6% last year.

Black and dark blue remain the most popular colors, with gray ranking second. White and cream are increasing in popularity. Green and maroon are only holding their position, while light blue is still less popular than in previous years. New colors introduced last year are gaining in popularity and such shades as green, blue, silver gray and gray brown are used both as straight colors and as iridiscent shades.

Two-tone body finishes have disappeared, but the use of two contrasting colors is increasing. An increased number of convertible and open cars were shown by the British manufacturers. Wire wheels are on the decline, approximately half of the cars having pressed steel or disc wheels. The sunshine roof is retaining its popularity.

Lacquered fabrics for upholstery and paneling are less used, practically all cars except the very cheapest ones using real leather. Fabric has found favor among the coach builders and on most limousines. Tempered safety glass is used in 95% of the cars; laminated glass is used in 5%. Only expensive cars are using laminated glass for wind-shields.

There is less streamlining than last year and no extreme designs are shown. Body lines of the British cars are less plain than previously, but still remain conservative. In the pleasure car exhibit, 58% are finished in cellulose lacquer and in the coach-builders' section 46%, giving an average of 54%.—Duco Color Advisory Service.

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# EDITORIAL

## Strengthened Production Lines for Increased Output

Within the past two years certain newly developed and improved products that sell to the general public have been made so attractive in appearance and price, and so desirable in point of utility, that factories making them are being taxed to capacity to meet the demands for these goods. This is notably the case with electric refrigerators, electric washing and ironing machines, oil burners, stokers, air-conditioners, automobile heaters and radios. Several of the factories making one or more of these items have added floor space and equipment from time to time until now some of them find that their production layouts need to be straightened, strengthened and better balanced to give them more economical and more smooth running operation.

For example, in visiting a well rated plant manufacturing one of these items recently, the Editor was impressed with the layout of finishing equipment, which included facilities for metal cleaning, dip finishing, spray finishing, sanding and baking. Dipping tanks, spray booths, and box ovens had been added wherever room could be found. Everything was crowded. Men were working under various handicaps. Some parts were moving too rapidly while others were going too slow to reach the assembly line simultaneously. Part of the department was working several hours overtime every day.

The finishing foreman realized that things were not operating smoothly or economically, but he was doing the best he could with what facilities he had available. He pointed out that his production lines needed realignment and strengthening—needed conveyors, water spray booths and continuous ovens in some places, so that work in process could move along more mechanically (in some places automatically) more rapidly and with predetermined timing . . . . with less handling and confusion. Probably next year something of that kind will be done in this plant, which at this writing is being enlarged to take care of increased production.

This one case is typical of

many. It's time for aggressive manufacturers of modern equipment to send representatives into the field and uncover some of these prospective jobs. Many of them will be big jobs for large well-financed concerns. The representative's job, when he finds a plant of this kind, will be to make a survey of the floor space available, volume of production required, type of work being done and likely to be performed, etc. Then submit drawings and specifications for a straightened, strengthened and well balanced production line complete in every detail.

Also, it is time for the executives and foreman finishers of these busy factories to investigate the latest equipment available for their work, so they will be better prepared to judge the merits and possibilities of what may be offered them by the various equipment manufacturers.

---

## Keep Your Foreman Interested, Loyal, Contented

Executives of manufacturing establishments, wherein a finishing department is included, have many problems today. One of these is the matter of being sure that their products are satisfactorily finished. This problem is largely taken care of by the foreman finisher — but this valuable individual must be kept interested or reasonably satisfied with his job. Probably every good foreman finisher believes he should be getting more money, although it is possible that the majority of them are being paid reasonably well when all conditions are considered. It is a delicate subject, but occasions arise where it must be faced.

Recently the Editor visited an establishment that is doing a greatly increased volume of business—so much that the plant has had to be enlarged. To my surprise, I found the finishing foreman sitting on a bench looking glum. I thought perhaps he was sick. He is a man of considerable experience, knowledge and ability, and the finish on his company's products (most of which are faced with fine hardwood veneers) is remarkable for its beauty, smoothness and durability. Before I left I learned that friend foreman's request for a raise in pay had been refused, and he was on the point of taking another job.

Of course, an ad in the newspaper will bring several applicants for this foreman's job—but will the man selected prove to be entirely satisfactory? He will be an unknown quantity in which to entrust the important responsibility of doing a good finishing job on this concern's excellent products. Many thousands of dollars' worth of goods will be finished and delivered before the manager can be sure of his new foreman's ability. Of course, the firm might get a better foreman or one equally as good at the wages they elect to pay. If they can, and if the new foreman will be satisfied, the quicker they make the change the better.

The desirable set of conditions which should prevail in every finishing department is that a satisfactory foreman must be on the job, he must be interested in his work, loyal to his employer, and reasonably contented with his job and rate of pay. It is an un-

healthy factory condition to have a foreman seriously dissatisfied with his salary, or discontented because of certain working conditions. Sooner or later his attitude and frame of mind will have a detrimental effect upon the quality or cost of output.

## Finishes Are on Parade

At the furniture markets, automobile shows, industrial exhibitions, in the stores, on the streets, in the conveyances in which we travel—in fact wherever we go, finished surfaces are on display to be seen and admired or inspected by everyone. Tremendous expenditures are being made to produce finished surfaces that attract the eye and create favorable impressions upon the public.

But all of these finished surface coatings must perform another important function. They must be durable to withstand service. As the man on the street says "they must hold up"; and in doing this they protect the structural surface underneath.

When we pause a moment to contemplate all this, we are impressed with the fact that finishes are very important—more important today than ever before. They are a vital factor in the selling of goods and in the building and maintenance of confidence in goods purchased. What manufacturer, therefore, can afford to slight the finish he puts on his goods? If the finish fails, his goods have failed—and if much of this occurs he is doomed to fail.

Let's give more weight to this factor in the production of our manufactured goods. Let's think of it when we are tempted to try using cheaper finishing materials, or when we hesitate about investing in better equipment to replace that which is obsolete or inadequate, or when we refuse to improve or correct factory conditions that are detrimental to the production of a first class finish.

We must consider the future and make decisions and investments accordingly. Large successful concerns have not built their success upon a policy of holding back and giving as little in value as they could get by with. Their histories are examples of continually striving to give better values. Instead of skimping to do it, they have spent more money and they are still spending more money for better materials and equipment. They have used their own brains and the best brains they could hire to effect the economies necessary to avoid making their production costs too high. They have realized that cheap materials and inadequate equipment are not economical and never will be.

## Letters from I. F. Readers

*(Continued from page 9)*

tirely satisfactory, and will bleach out to the required whiteness for final finishing. We can supply a system for finishing over the bleach.

In regard to our veiling, spattering and stippling lacquer, we believe it is only necessary to say that over 25% of the manufacturers use this type of material which is being supplied by us.

We will appreciate the opportunity of corresponding with these inquirers . . . —The Gilbert Spruance Co.

## Gold Finish on Brass

We are wondering if you could put us in touch with someone who could tell us how to obtain a lacquer finish on brass that would give us a rich gold finish? At the present time we are polishing the brass surface and spraying it with Bakelite lacquer, baking it at the proper degree. This lacquer, however, is water white, and we thought that perhaps by mixing the analine color with the lacquer, that it would give us the finish desired. — E. O. Co. (Precision Balances & Weights).

## Electric Insulator Paint

We are interested in an announcement in the August issue, page 62, of INDUSTRIAL FINISHING, on "Coppr-Black," developed by Mr. George A. Endom—having in mind a possible application of this material to the problem of elimination of radio interference from porcelain transmission line insulators. This radio interference arises from static spark discharges which occur between the line wire conductor and the surface of the insulators, particularly at the higher voltages. These discharges may be eliminated by the application of a conducting coating or paint to the areas on the porcelain insulator adjacent to the metallic conductor and tie wire. The main difficulty has been to secure such a material which would be easy to apply, which would stick permanently to the surface of the insulator, and which would withstand outdoor weather actions of wind, dirt, sun and rain, and some possible electrolytic reactions over a period of years.

Most of the insulators now in service have glazed and fairly smooth glassy surfaces, so it would seem difficult to secure good adherence of the coating. On new insulators the particular areas to be coated could be left unglazed, leaving a reasonably rough surface to which it might be easy to secure permanent adherence of the coating. We would be glad to have your expert opinion on the possible application of this material.

Will you please advise us the price, particularly of a small can or lot, that we may try out experimentally.—H. H. R. Co.

## Mirror Paint Lifts

Your little publication is just what we have been looking for—chock full of interesting reading matter and very well balanced. You may certainly enter our subscription for one year and we are pleased to enclose herewith check for $2.00.

Is there any material or special paint that we can silk screen on glass and then silver in the usual mirror process?

At the present time we are using a very good paint and waterproof varnish, but have a great many rejects on our work because of lifting of the stripes which we screen on the glass. We also get many spoiled ones after the mirror backing, which is a turpentine base, is put on. The puzzling thing of this situation is that this does not happen always, but on certain days. We are wondering if there is any substance that can be added to our present silk screening, or is there a material on the market that would be resistant to the silvering process and can be silk screened?

We are wondering, whether the humidity present in the air on certain days would be the cause? — D. N. G. Co. (Mirrors, Framed Pictures).

## Coating Machine

We are interested in purchasing a coating machine for coating glue on paper, celluloid, light metal, etc., and are wondering if you can give us the address of manufacturers of such a product.

We refer particularly to a machine that was advertised recently in your publication INDUSTRIAL FINISHING. We are unable to find the particular issue that contained this advertisement, but as near as we can recall the ad incorporated a diagram of the machine and the manufacturer was located in Indianapolis. We will appreciate it if you can locate this particular advertisement in your files for us and give us the complete address.

If you are aware of any other

such devices we will be glad to receive the address of the manufacturers.—T. S. Co. (Stencil Paints and Stencil Supplies).

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The machine you have in mind was described and illustrated in Aug. 1936 issue, page 56. It is made by Chas. E. Francis Co., Rushville, Ind. Names of other manufacturers of coating machines are given in our letter to you.—Ed.

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## Kulr Kote

I wonder if you could give me some information about a new wax for polishing automobiles called "Kulr Kote"? I understand it is put out by the Darlington Co. of San Pedro, Calif. I would like to know where it may be purchased; and whether or not it is on the market in retail stores or just, as I understand, for concerns. I understand it comes in various colors to match the color of your car.—R. M. (Chicago, Ill.).

---

In reply to this question, we quote brief excerpts from literature we just received on Kulr Kote:

Kulr Kote protects the beauty and appearance of the new car; shields the pores against traffic scum; wards off deterioration and oxidation of the finish. For automobiles that have been in service for some time, Kulr Super Cleaner penetrates to the bottom of the tiny pores, dissolves the accumulated dirt and dust and makes it easy to remove, at the same time preparing the surface for the induction of Kulr Kote finish builder. Once emptied of this foreign matter, the finish builder will fuse with the original paint pigments and bring out the true life and color, seal the pores, and leave a hard, lustrous, dry finish—no oily, waxy surface to attract more dust and dirt.

Once Kulr Kote has been applied, it is easy to keep your car clean and shining bright with periodic cleaning of the surface, using regular Kulr Kote cleaner. Easier and quicker than washing. Removes the accumulated surface film without destroying the finish builder. It continues to build instead of tearing down, because it contains no harsh abrasives, harmful acids or chemicals.

Kulr Kote comes in colors to match your car—red, blue, green, beige, black, yellow, transparent—adding new life and new color to the faded finish of your car. Kulr Kote is not a paint, yet it is more than a polish.

A letter from the Darlington Kulr Kote Co., 2800 S. Pacific Ave., San Pedro, Calif., states that:

"Kulr Kote is sold only to new car dealers. Special departments are installed in their service rooms. Men who have been intensively trained in Kulr Kote application are in charge. Cars are serviced monthly, much in the same follow-up manner as the lubrication or battery departments."

---

## Dr. Harry L. Fischer Joins U. S. I. Research Staff

Dr. Harry L. Fisher, noted for his scientific contributions in the rubber and chemical fields, has joined the U. S. Industrial Alcohol Co., as a member of its research staff. He will make his headquarters in the new research laboratories of the company, located at Stamford, Conn.

For the past 17 years, Dr. Fisher has been identified with important research in the rubber industry, having served with the B. F. Goodrich Co. and U. S. Rubber Co. successively. He has specialized in developments pertaining to rubber, resins, organic combustions and nitrogen heterocycles. Among his accomplishments are a number of patents covering important chemical processes and products.

---

## Alsop Occupies New Plant

The Alsop Engineering Corp. has moved to a new factory in Milldale, Conn., but is retaining offices, show rooms and a service department in New York at 17 W. 60th St.

This manufacturer of "Hy-Speed" electric mixers, filters and filtering materials, bottle fillers, screw cappers, labelers, glass-lined tanks, etc., formerly was located at 39 W. 60th St., New York, where the establishment occupied about 25,000-sq. ft. of space.

The need for more space, better shipping facilities and a more efficient manufacturing layout, due to a greatly increased business, made a move of this kind absolutely necessary. The new plant is on a plot of 10½ acres, and the buildings cover about 60,000-sq. ft.

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## Goes to England to Install Finishing Equipment

C. W. Smith, M. E., Leonard Industrial Bldg., Grand Rapids, Mich., manufacturer of dip-finishing machinery, is now in England installing complete equipment at the Hollis Bros. Co. plant, Hull, England, for finishing sweeper and duster handles, long dowels, etc.

## The Mahogany Book

The second edition of The Mahogany Book, just released by the Mahogany Association, Inc., 75 E. Wacker Drive, Chicago, Ill., contains 80 pages 6¾x10-in. profusely illustrated to show mahogany from the growing timber to the finished product.

A valuable feature of the book is the many fine halftone illustrations showing the best designs in Period furniture from the time of English and French Renaissance . . . . on down to modern times.

All the different figured effects of variously cut mahogany veneers are shown and described. Other products made of mahogany are also illustrated. The heavy paper covers of the book are finished in grained mahogany of natural color.

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A well-established, progressive Eastern manufacturer of quality Industrial Coatings is seeking salesmen for Ohio and Illinois. Personal character, ambition and the will to develop a successful permanent volume of business are as important as experience or claims as to volume of business applicant commands. An unusual opportunity for the right man. Address IF-642, care Industrial Finishing.

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